43

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20014
Tel. (301) 496-1131
ISSN: 0146-1559

# TOX-TIPS

**Toxicology Testing in Progress • A monthly current awareness bulletin**

NTISUB/E/150-012
Number 43
December 1979

TABLE OF CONTENTS

Page

2 About TOX-TIPS
3 Carcinogenic Bioassay of New and Used Lubricants
5 Carcinogenic Bioassay of New and Used Lubricants
7 Carcinogenic Bioassay of New and Used Lubricants
9 Chemical Characterization and Toxicologic Evaluation of Airborne Mixtures
11 Chemical Characterization and Toxicologic Evaluation of Airborne Mixtures
13 Industrial Hygiene/Mortality Study of Workers Exposed to Selenium
15 Epidemiologic Study of Workers in Petroleum Refineries and Petrochemical Plants
17 Mortality Study of Potash Workers
19 Spontaneous Abortions Among Employed Women
21 Mortality, Medical and Industrial Hygiene Study of Workers Exposed to Nitroglycerin
23 Medical and Industrial Hygiene Study of Workers Exposed to 4,6-Dinitro-2-sec-butylphenol (DNBP)
25 Mortality Study of Workers Exposed to Carbon Monoxide
27 ANNUAL INDEX OF COMPOUNDS
72 INDEX OF INSTITUTIONS AND INVESTIGATORS
79 NOTICE OF RESEARCH PROJECT BLANK FORM

---

NOTICE:

This December 1979 issue carries the Index of Compounds and Index of Institutions and Investigators cumulated since Issue No. 1. These indexes will NOT be reprinted.

Commencing with the January 1980 issue of TOX-TIPS, the indexes will be cumulated on the schedule followed previously.

Sponsored by

Toxicology Information Subcommittee
DHEW Committee to Coordinate
Toxicology and Related Programs

HE 20.3620

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHEW Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NCI Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches of the National Library of Medicine's on-line data bases.

Input to TOX-TIPS is submitted on Smithsonian Science Information Exchange (SSIE) Notice of Research Project forms included in each TOX-TIPS issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt. After the project description and related data are published, the information is relayed to SSIE for inclusion in that national database of information on research-in-progress.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road  Springfield, VA  22161

Annual Rates:
North American Continent addresses $35
All others $70
Bulk rates available on request from NTIS

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION

American Petroleum Institute
2101 L Street, N.W.
Washington, D. C. 20037

SUPPORTING ORGANIZATION NUMBER(S)

Contract No: PS-37
and/or
Control No:

PROJECT TITLE

Carcinogenic Bioassay of New and Used Lubricants

INVESTIGATOR(S)

Raymond R. Suskind, M.D.

DEPARTMENT/SPECIALTY SCHOOL OR DIVISION

Department of Environmental Health

PERFORMING ORGANIZATION

Name and Address Including Zip Code:
Kettering Laboratory
University of Cincinnati
3223 Eden Avenue
Cincinnati, OH 45267

PERIOD FOR THIS NRP

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY

Mouse skin painting studies will be conducted on solvent refined and dewaxed paraffinic base stocks used in lubricating oils. Five paraffinics will be tested with SUS 100°F viscosities of 70, 150, 350, 500 and 900. Groups of 50 C3H/HeJ mice will be treated twice weekly with neat samples via calibrated dropper for 24 months or until tumor appearance. Observation will continue after the treatment period until imminent death of each survivor whereupon the animals will be autopsied. If tumors occur, they and any suspicious skin lesions will be categorized upon histopathologic examination. Time to tumor will be estimated and tumor locations specified. Complete histologic examination of major organs will be conducted on half the animals and of any suspicious internal lesions on all animals.

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

Bingham E ; Nord PJ
Cocarcinogenic effects of n-alkanes and ultraviolet light on mice.
J Natl Cancer Inst; VOL 58, ISS 4, 1977, P1099-101

CLAUSEN J ; RASTOGI SC
Heavy metal pollution among autoworkers: I. Lead.
BR J IND MED; 34 (3). 1977 208-215

BIZZINI B ; CHAMPIGNEUX P ; GUYOTJEANNIN C ; LEBRETON P
TISSEUIL H ; CHEVALIER J ; BLAISE F ; THUREL C ; TURPIN A
Investigation of the antitetanus immunity of a population of mechanics of the Renault car factory: Effect of different factors including contamination of machine fluids by Clostridium tetani.
ANN MICROBIOL (PARIS); 129B (3). 1978. 437-450.

Fisher J
ACUTE FISH BIOASSAY
Toxicology Research Projects Directory, Vol.04 iss.07 1979

MONTGOMERY MR ; WIER GT ; ZIEVE FJ ; ANDERS MW
Human intoxication following inhalation exposure to synthetic jet lubricating oil.
CLIN TOXICOL; 11 (4). 1977 (RECD 1978) 423-426

Zmeeva LP ; Zadorozhny˘i VV ; Sizova KV
[Prevention of suppurative diseases when the hands are contaminated with lubricating oils, soot, carbon black and coal dust]
Klin Khir, ISS 12, 1976, P56-7

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION

American Petroleum Institute
2101 L Street, N.W.
Washington, D. C. 20037

SUPPORTING ORGANIZATION NUMBER(S)

Contract No: PS-37
and/or
Control No:

PROJECT TITLE

Carcinogenic Bioassay of New and Used Lubricants

INVESTIGATOR(S)

Raymond R. Suskind, M.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Department of Environmental Health

PERFORMING ORGANIZATION

Name and Address, Including Zip Code.

Kettering Laboratory
University of Cincinnati
3223 Eden Avenue
Cincinnati, OH 45267

PERIOD FOR THIS NRP

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY

Mouse skin painting studies will be conducted on solvent refined naphthenic base stocks used in lubricating oils. Two naphthenics will be tested with SUS 100$^{\circ}$F viscosities of 80 and 2000 (or 90 for SUS 210$^{\circ}$F). Groups of 50 C3H/HeJ mice will be treated twice weekly with neat samples via calibrated dropper for 24 months or until tumor appearance. Observation will continue after the treatment period until the imminent death of each survivor whereupon the animals will be autopsied. If tumors occur, they and any suspicious skin lesions will be categorized upon histopathologic examination. Time to tumor will be estimated and tumor locations specified. Complete histologic examination of major organs will be conducted on half the animals and of any suspicious internal lesions on all animals.

Sponsored by • Toxicology Information Subcommittee • DHEW Committee to Coordinate Toxicology and Related Programs

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

Ibragimova MG
Toxic and blastomogenic properties of some lubricating oils from petroleum of the Tuimazy field
Vopr. Reakt. Org. Norme Patol., Mater. Nauchn. Konf.; 1974,62-4

Kustov VV ; Obukhova MF ; Ostapenko OF
Toxicology of Synthetic Lubricating Materials
1977,192 pp.

Fu TT ; Chapler RS
SYNTHETIC FUEL COMBUSTION
Toxicology Research Projects Directory, Vol.04 iss.10 1979

Sikka HC
FATE OF SELECTED AIR FORCE PROPELLANTS AND LUBRICANT ADDITIVES IN THE AQUATIC ENVIRONMENT
Toxicology Research Projects Directory, Vol.04 iss.08 1979

Shishkanov VV ; Erlinbush VY ; Zhakenova RK
Effect of polymetallic dust and lubricating oil on the surface activity of lung surfactant
Nauchno-Tekh. Prog. Gig. Tr.; 1977,148-50

Mathieson JM
X-ray analysis of automotive lubricants
Finnigan Spectra; VOL 6, ISS 2, 1976,3-7

PAYNE JF ; MARTINS I ; RAHIMTULA A
CRANKCASE OILS: ARE THEY A MAJOR MUTAGENIC BURDEN IN THE AQUATIC ENVIRONMENT
SCIENCE; 200:329-330,1978; CA 89-54198

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION:

American Petroleum Institute
2101 L Street, N.W.
Washington, D. C. 20037

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: PS-37
and/or
Control No:

PROJECT TITLE:

Carcinogenic Bioassay of New and Used Lubricants

INVESTIGATOR(S):

Raymond R. Suskind, M.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Department of Environmental Health

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
Kettering Laboratory
University of Cincinnati
3223 Eden Avenue
Cincinnati, OH 45267

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY

Mouse skin painting studies will be conducted on a composite motor oil. Both new and used samples of this oil will be tested. Used samples will be generated from automobiles which have been driven 5000 miles on this oil. Groups of 50 C3H/HeJ mice will be treated twice weekly with neat samples via calibrated dropper for 24 months or until tumor appearance. Observation will continue after treatment period until the imminent death of each survivor whereupon the animals will be autopsied. If tumors occur, they and any suspicious skin lesions will be categorized upon histopathologic examination. Time to tumor will be estimated and tumor locations specified. Complete histologic examination of major organs will be conducted on half the animals and of any suspicious internal lesions on all animals.

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

Stasenkova KP ; Shumskaya NI ; Gurvich YA ; Zolotarevskaya LK
Evaluation of the general toxic and blastomogenic action of paraffin-naphthenic petroleum oils
Kauch. Rezina; ISS 1, 1976,38

K"orm"oczy I
[Hand injuries caused by high pressure lubricants (author's transl)]
Magy Traumatol Orthop; VOL 21, ISS 4, 1978, P317-9

PAYNE JF ; MARTINS I ; RAHIMTULA A
CRANKCASE OILS: ARE THEY A MAJOR MUTAGENIC BURDEN IN THE AQUATIC ENVIRONMENT
SCIENCE; 200:329-330,1978; CA 89-54198

Clark DG
The toxicity of some typical lubricating oil additives
Erdoel Kohle, Erdgas, Petrochem.; VOL 31, ISS 12, 1978,584

Profiles on occupational hazards for criteria document priorities
U. S. NTIS, PB Rep.; ISS PB-274073,, 1977,317 pp.

Laubstein H
Skin diseases during the handling of lubricants
Schmierungstechnik; VOL 8, ISS 5, 1977,161-4

Karpova NI ; Ignatiuk AN ; Glinchikov VV
[Ultrastructural features of the skin following exposure to industrial lubricants]
Gig Tr Prof Zabol, ISS 7, 1979, P47-9

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION:
U. S. Army Medical Research and Development Command
Ft. Detrick
Frederick, MD 21701

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: DAMD 17-79-C-9160
and/or
Control No:

PROJECT TITLE:
Chemical Characterization and Toxicologic Evaluation of Airborne Mixtures

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Environmental Protection
Research Division
U. S. Army Medical Bioengineering
R & D Laboratory

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
Battelle Memorial Institute
Pacific Northwest Laboratories
P. O. Box 999
Richland, WA 99352

PERIOD FOR THIS NRP:
Start Date: October, 1979
End Date: September, 1982
Annual Funding:

PROJECT SUMMARY:

The objectives of the program are to characterize the chemical components of two smoke aerosols generated by vaporization of light lubricating oil or combustion of red phosphorus/butyl rubber, and to provide a comprehensive definition of the biologic effects of the smokes to mammalian systems under conditions which simulate potential troop exposure. Sprague-Dawley rats will be exposed to smoke aerosols in inhalation chambers. These studies will elucidate the relative toxicologic importance of dose, duration of exposure, interval between repeated exposures, and recovery duration. The three phases of the program include acute, repeated exposures of several concentrations with various intervals between exposures, and a 13-week subchronic study. Response criteria for toxicologic and pathologic disturbances produced by these smokes will include immunologic, cellular and biochemical changes, alterations in pulmonary function, and neurobehavioral changes.

CAS Registry No.

| | |
|---|---|
| Red phosphorus | 7723-14-0 |
| Butyl rubber | 9010-85-9 |

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

KING WR ; PETERSON JE
PHOSPHORUS VAPOR EXPOSURE IN PHOSPHORUS USING PLANTS
AM IND HYG ASSOC J; 39 (11). 1978 922-927

Wasti K ; Abaidoo KJ R ; Villaume JE
A Literature Review - Problem Definition Studies on Selected Toxic Chemicals, Vol. 2: Occupational Health and Safety Aspects of Phosphorus Smoke Compounds
1978, 103 pp.

Berdykhodzhin MT ; Tulebaev RK ; Krikunov AF
Evaluation of the health status of workers at a phosphorus plant
Zdravookhr. Kaz.; ISS 7, 1974, 42-4

Litau VG ; Obukhova MF ; Solov'ev VI
Effect of mixtures of the volatile products from the thermooxidative decomposition of lubricating oil on experimental animals
Gig. Tr. Prof. Zabol.; ISS 7, 1975, 23-6

Bruskin ZZ ; Demchenko VG
[External respiration and gas exchange in workers exposed to the action of lubricating oil aerosols]
Gig Tr Prof Zabol, ISS 4, 1975, P28-30

LUTOV VA
TOXICOLOGICAL CHARACTERISTICS OF PETROLEUM OIL AEROSOLS USED AS LUBRICATING COOLING FLUIDS
ZDRAVOOKHR BELORUSS; 19 (11). 1973 (RECD 1974) 38-40

Hussey HH
Phosphorus poisoning in children.
J. Am. Med. Assoc. 235(13): 1366; 1976.(2 references)

Lee CC
MUNITION COMPOUNDS MAMMALIAN-TOXICITY STUDY
Toxicology Research Projects Directory, Vol.04 iss.08 1979

NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION

U. S. Army Medical Research and Development
Command
Ft. Detrick
Frederick, MD 21701

SUPPORTING ORGANIZATION NUMBER(S)

Contract No:
and/or
Control No:

PROJECT TITLE

Chemical Characterization and Toxicologic Evaluation of Airborne Mixtures

INVESTIGATOR(S)

DEPARTMENT/SPECIALTY SCHOOL OR DIVISION

Environmental Protection
Research Division
U. S. Army Medical Bioengineering
R & D Laboratory

PERFORMING ORGANIZATION

Name and Address. Including Zip Code.
Oak Ridge National Laboratory
Biology Division
P. O. Box Y
Oak Ridge, TN 37830

PERIOD FOR THIS NRP

Start Date: July, 1979
End Date: June, 1982
Annual Funding:

PROJECT SUMMARY

The objectives of the program are to characterize the chemical components of a smoke aerosol generated by vaporization of diesel fuel, and to provide a comprehensive definition of the biologic effects of the smoke to mammalian systems under conditions which simulate potential troop exposure. Sprague-Dawley rats will be exposed to smoke aerosols in inhalation chambers. These studies will elucidate the relative toxicologic importance of dose, duration of exposure, interval between repeated exposures, and recovery duration. The three phases of the program include acute, repeated exposures to several concentrations with various intervals between exposures, and a 13-week subchronic study. Response criteria for toxicologic and pathologic disturbances produced by smoke will include immunologic, cellular and biochemical changes, and alterations in pulmonary functions.

CAS Registry No.

| | |
|---|---|
| Fuels, diesel, No. 2 | 68476-34-6 |
| Petroleum products, diesel oil | 68334-30-5 |

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024Oak Ridge, TN 37830 — Phone: 615- 576-1743.

Crisp AJ ; Bhalla AK ; Hoffbrand BI
Acute tubular necrosis after exposure to diesel oil.
Br Med J; VOL 2, ISS 6183, 1979, P177

Toofanian F ; Aliakbari S ; Ivoghli B
Acute diesel fuel poisoning in goats.
Trop Anim Health Prod; VOL 11, ISS 2, 1979, P98-101

Young RW ; Bogo V
BEHAVIORAL TOXICITY OF MILITARY MATERIALS
Toxicology Research Projects Directory, Vol.04 iss.12 1979

Beliles RP ; Mecler FJ
TERATOGENIC POTENTIAL OF DIESEL FUEL
Toxicology Research Projects Directory, Vol.04 iss.10 1979

Liss-Suter D ; Mason R
A literature review-problem definition studies on selected toxic chemicals. Volume 1
Report; ISS Order No. AD-A056018,, 1978,64 pp.

BARRIENTOS A ; ORTUNO MT ; MORALES JM ; MARTINEZ TELLO F
RODICIO JL
Acute renal failure after use of diesel fuel as shampoo.
ARCH INTERN MED; 137 (9). 1977 1217

Ranger SF
A case of diesel oil poisoning in a ewe.
Vet Rec; VOL 99, ISS 25-26, 1976, P508-9

Starek A ; Fiema L ; Cembala D ; Lepiarz W
Comparing toxicity of certain oil products used as dielectrics in electroerosive working. I. Acute and subacute toxicity
Med. Pr.; VOL 26, ISS 3, 1975,219-30

MOORE ED ; DOWLEN HH ; OWEN JR ; RICHARDSON DO
BOVINE HYPER KERATOSIS OF THE SKIN FROM OIL CARRIERS AND AN INSECTICIDE ON BACKRUBBERS
J DAIRY SCI; 59 (1). 1976 24

MEHROTRA TN ; GOVIL MK ; GUPTA BK ; VAJPAI GN ; MURALIDHAR S
GOUR KN
Study of effects of smoke on experimental animals.
LABDEV J SCI TECHNOL PART B LIFE SCI; 12 (2). 1974 (RECD 1975) 78-80

NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION:

National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No: VMH-M21-666

PROJECT TITLE:

Industrial Hygiene/Mortality Study of Workers Exposed to Selenium

INVESTIGATOR(S):

Mr. Kenneth Wallingford

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP

Start Date: October, 1979
End Date: January, 1983
Annual Funding:

PROJECT SUMMARY:

The U. S. produces and uses approximately 1.4 million pounds of selenium annually. All primary selenium producers are electrolytic copper refiners. Selenium compounds are manufactured by approximately 10 producers at various locations within the U.S. Chronic Selenium poisoning in test animals has been shown to have widespread effects with lesions occurring in all the internal organs. Selenium and its compounds have been shown to be carcinogenic in rats, and teratogenic for chicks, sheep, pigs, and cattle. In addition, chronic selenium poisoning has produced adverse effects in the reproductive system in rats, sheep, cattle, and other grazing animals. In industrial situations, workers exposed to elemental selenium in the form of fine dust have developed nosebleeds, loss of the sense of smell, inflammation of respiratory mucous membranes, and dermatitis.

The purpose of this project is to conduct an industrial hygiene/retrospective cohort mortality study of workers exposed to selenium to evaluate the long term effects. The first phase of the investigation will be a study to determine the extent of exposure, to characterize the work environment, and to assess the feasibility of conducting the mortality portion of the study. The second phase, if initiated, will be a comprehensive industrial hygiene characterization and retrospective mortality study of the selected site(s).

CAS Registry No.
Selenium 7782-49-2

Sponsored by • Toxicology Information Subcommittee • DHEW Committee to Coordinate Toxicology and Related Programs

**The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.**

Shamberger RJ ; Gunsch MS ; Willis CE ; McCormack LJ
Selenium and heart disease. II. Selenium and other trace metal intakes and heart disease in 25 countries
Trace Subst. Environ. Health; VOL 12,, 1978,48-52

Shamberger RJ
SELENIUM OCCURRENCE AND HUMAN CANCER MORTALITY - FAT AND BEEF CONSUMPTION AND HUMAN CANCER MORTALITY
Toxicology Research Projects Directory, Vol.04 iss.05 1979
Epidemiology Research Projects Directory, 1979

Nakaya K ; Morimoto T ; Sugitani A ; Yamada F
Studies on the influence of environmental pollution with heavy metals on human health. V. Methyl mercury(Me-Hg) and selenium(Se) contents in human hair
Gifu-ken Eisei Kenkyusho Ho; VOL 23,, 1978,35-9

Ducloux JP ; Ducloux B ; Frantz P ; Vincent V
Recording a selenium intoxication. Review of the literature.
Acta Pharmacol Toxicol [Suppl] (Kbh); VOL 41, ISS 2, 1977, P427

Lacasse Y ; Richer C
[Toxicity of selenium and its derivatives]
Union Med Can; VOL 105, ISS 8, 1976, P1192-9

Shamberger RJ ; Tytko SA ; Willis CE
Antioxidants and cancer. Part VI. Selenium and age-adjusted human cancer mortality.
Arch Environ Health; VOL 31, ISS 5, 1976, P231-5

SHEARER TR ; HADJIMARKOS DM
Geographic distribution of selenium in human milk.
ARCH ENVIRON HEALTH; 30 (5). 1975 230-233

Shah NA M ; Nitisewojo P
Mercury-selenium and cadmium-selenium interaction on mitochondrial function
Proc. Malays. Biochem. Soc. Conf.; VOL 4,, 1977,87-94

Whanger PD
Cadmium effects in rats on tissue iron, selenium, and blood pressure; blood and hair cadmium in some Oregon residents
EHP, Environ. Health Perspect.; VOL 28,, 1979,115-21

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION
National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S)
Contract No:
and/or
Control No: VMH-C22-662

PROJECT TITLE
Epidemiologic Study of Workers in Petroleum Refineries and Petrochemical Plants

INVESTIGATOR(S)
Dr. Richard Waxweiler

DEPARTMENT/SPECIALTY SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION
Name and Address. Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP
Start Date: October, 1979
End Date: February, 1981
Annual Funding:

PROJECT SUMMARY

An NCI study examined the cause-specific mortality experience of workers who were active members of Oil, Chemical and Atomic Workers International Union (OCAW) Locals in Texas at the time of death. Proportional Mortality Ratios (PMR's) for stomach and brain cancers, for leukemia, and for multiple myeloma were elevated among white males who worked in petroleum refineries and petrochemical plants and were Union members for at least 10 years. In particular, increased relative frequencies of stomach and brain cancer deaths were found among white male members who were employed at a refinery in Port Arthur (Plant A). In addition, PMR's were elevated for lung cancer among nonwhites and stomach cancer in both racial groups employed at another refinery in Port Arthur (Plant B).

Observed numbers of deaths from leukemia, and from cancers of the kidney and skin were greater than expected among white males at Plant B, but observed numbers were very small.

A third refinery in Beaumont, Texas, was found to have excess lung and brain cancers. A case-control study will be done as a timely second step to examine excess deaths from certain cancers in greater detail.

Detailed work histories will be obtained for each case control to determine length of employment in these plants, specific job(s) held, work location(s) within the plants, and any other employment or exposure information that is available.

The case control study may be followed by a more definitive cohort study.

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

Th´eriault G ; Goulet L
A mortality study of oil refinery workers.
JOM; VOL 21, ISS 5, 1979, P367-70

Purde M ; Rahu M
Cancer patterns in the oil shale area of the Estonian S.S.R.
Environ Health Perspect; VOL 30, 1979, P209-10

Costello J
Morbidity and mortality study of shale oil workers in the United States.
Environ Health Perspect; VOL 30, 1979, P205-8

K¨ung VA
Morphological investigations of fibrogenic action of Estonian oil shale dust.
Environ Health Perspect; VOL 30, 1979, P153-5

HANIS NM ; STAVRAKY KM ; FOWLER JL
Cancer mortality in oil refinery workers.
J OCCUP MED; 21 (3). 1979. 167-174.

Heyl T
Contact dermatitis from silver coat
Contact Dermatitis; VOL 5, ISS 3, 1979,197

Przybylowski J ; Sroczynski J ; Podolecki A ; Wysocki J
Swierczynski Z ; Sychlowy A ; Guz I
State of health of workers chronically exposed to ethyl gasoline and other petroleum products
Med. Pr.; VOL 29, ISS 6, 1978,539-44

Amirov RO
Some problems concerning occupational hygiene and physiology in operators at petroleum processing plants
Gig. Tr. Prof. Zabol.; ISS 1, 1979,9-12

Weaver NK ; Schottenfeld D
MORTALITY-MORBIDITY STUDY AND TUMOUR REGISTRY FOR PETROLEUM, REFINING, PETROCHEMICAL AND RESEARCH AND DEVELOPMENT WORKERS
Toxicology Research Projects Directory, Vol.04 iss.04 1979
Epidemiology Research Projects Directory, 1979

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike  Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION

National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S)

Contract No:
and/or
Control No: VMH-M22-664

PROJECT TITLE

Mortality Study of Potash Workers

INVESTIGATOR(S)

Dr. Richard Waxweiler
Mr. Dennis Roberts

DEPARTMENT/SPECIALTY SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION

Name and Address, Including Zip Code:
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP

Start Date: October, 1979
End Date: September, 1981
Annual Funding:

PROJECT SUMMARY

The long term effects of diesel exposures need to be thoroughly evaluated as diesel fuel begins to take on a more important role in our country's energy policy. An occupation believed to have fairly high levels of diesel exposures is underground mining. Although most mines would have many other confounding exposures such as asbestos, radon daughters, and arsenic, potash mines have presumably non-carcinogenic environments as determined by a previously conducted retrospective cohort mortality study of 2743 underground and 1143 surface potash miners (Waxweiler et al., J. Occup. Med. 1973). Diesels were introduced in these mines in the early 1950's. By extending the epidemiologic study from 1967 to include follow-up through 1978, a 25 year latency period could be evaluated for many of the miners. In-depth industrial hygiene surveys would characterize current worker exposures to diesel exhaust, and evaluate existing engineering controls and work practices. The control technology section of NIOSH has an analogous project to evaluate diesel exposures underground in relation to such parameters as duty time and preventive maintenance.

CAS Registry No.

| | |
|---|---|
| Potash (potassium oxide) | 12136-45-7 |
| Potash (potassium carbonate) | 584-08-7 |
| Fuels, diesel, No. 2 | 68476-34-6 |
| Petroleum products, diesel oil | 68334-30-5 |

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024Oak Ridge, TN 37830 — Phone: 615- 576-1743.

Reger R
MORBIDITY STUDY EFFECTS OF DIESEL EXHAUST ON NON-COAL MINERS
Toxicology Research Projects Directory, Vol.04 iss.01 1979
Epidemiology Research Projects Directory, 1979

Heino M ; Ketola R ; M¨akel¨a P ; M¨akinen R ; Niemel¨a R
Starck J ; Partanen T
Work conditions and health of locomotive engineers. I. Noise, vibration, thermal climate, diesel exhaust constituents, ergonomics.
Scand J Work Environ Health; VOL 4 Suppl 3, 1978, P3-14

Kulich J
Radium in diesel oil
Report; ISS SSI-1977-019,, 1977,6 pp.

WAXWEILER RJ ; WAGONER JK ; ARCHER VE
Mortality of potash workers.
J OCCUP MED; 15 (6). 1973 486-489

MARENDUZZO A
Occupational diseases of the oral cavity: I. Occupational oral changes.
RIV ITAL STOMATOL; 27 (1-6). 1972 17-84

Williams N
Potash ore and perforation of the nasal septum.
J Occup Med; VOL 16, ISS 6, 1974, P383-7

Crisp AJ ; Bhalla AK ; Hoffbrand BI
Acute tubular necrosis after exposure to diesel oil.
Br Med J; VOL 2, ISS 6183, 1979, P177

Risby TH ; Lestz SS
EXHAUST EMISSIONS FROM A DIESEL ENGINE
Toxicology Research Projects Directory, Vol.05 iss.01 1980

Toofanian F ; Aliakbari S ; Ivoghli B
Acute diesel fuel poisoning in goats.
Trop Anim Health Prod; VOL 11, ISS 2, 1979, P98-101

Young RW ; Bogo V
BEHAVIORAL TOXICITY OF MILITARY MATERIALS
Toxicology Research Projects Directory, Vol.04 iss.12 1979

NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION

National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S)

Contract No:
and/or
Control No: VMH-W22-665

PROJECT TITLE

Spontaneous Abortions Among Employed Women

INVESTIGATOR(S)

Dr. Bruce Albright
Dr. Sanford Leffingwell

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION

Name and Address, Including Zip Code:
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP

Start Date: October, 1979
End Date: March, 1982
Annual Funding:

PROJECT SUMMARY

NIOSH periodically receives inquiries about complaints of fetal loss from women employed in various work places. Beyond the generally accepted estimate of gynecologists that about one pregnancy in ten terminates in spontaneous abortion and one well-controlled study in Hawaii with few white participants, there are no reliable standards to which we can compare the experience of a group of women. Furthermore, effects of prior abortions on the probability of successful completion of a present pregnancy are not well documented.

This study would seek to establish rates for spontaneous abortions in a variety of working populations through the following steps:

1. Concurrent literature review and consultation with experts or organizations interested in pregnancy outcome to assure that this information is not already available.

2. Feasibility study to ascertain whether large national organizations with sizable constituencies of young women would assist in this type of study. Organizations for consideration may include the National Education Association; the International Ladies Garment Workers Union; the American Federation of State, County, and Municipal Employees; and female federal employees. We would be looking for cohorts with differing socio-economic and regional backgrounds but without high exposures to toxic agents.

3. If a cohort could be found, members planning to become pregnant would be asked to register with NIOSH. Each woman would be given a log book in which to record each menstrual period and a home pregnancy detection kit. Each participant would be given a questionnaire dealing with demographic data, past pregnancy history, etc.

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.

Cohen EN
ANESTHETIC EXPOSURE AND HEALTH OF DENTAL PERSONNEL
Toxicology Research Projects Directory, Vol.05 iss.01 1980
Epidemiology Research Projects Directory, 1980

SAMOILOVA GS ; MARINOVA G
EFFECT OF INDUSTRIAL VIBRATION ON SPECIFIC FUNCTIONS OF A WOMANS BODY
GIG SANIT; (6). 1978 27-31

Makletsova NY
Characteristics of the course of pregnancy, childbirth, and the period after birth in female workers in contact with the pesticide zineb
Pediatr., Akush. Ginekol.; ISS 2, 1979,45-6

Nordstr"om S ; Beckman L ; Nordenson I
Occupational and environmental risks in and around a smelter in northern Sweden. V. Spontaneous abortion among female employees and decreased birth weight in their offspring.
Hereditas; VOL 90, ISS 2, 1979, P291-6

DEJMEK J
Spontaneous abortions and the mutation load of the population.
BIOL LISTY; 43 (3). 1978. 161-179.

Kucerova J
PROSPECTIVE STUDY ON THE FREQUENCY OF MALFORMATIONS AND SPONTANEOUS ABORTIONS IN NORTHERN MORAVIA
Toxicology Research Projects Directory, Vol.04 iss.04 1979
Epidemiology Research Projects Directory, 1979

Brown SM ; Bagniewski AK
FETAL WASTAGE AND CHEMICAL EXPOSURE
Toxicology Research Projects Directory, Vol.04 iss.06 1979

Cohen EN
ANESTHETIC EXPOSURE AND HEALTH OF DENTAL PERSONNEL
Toxicology Research Projects Directory, Vol.04 iss.05 1979
Epidemiology Research Projects Directory, 1979

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION
National Institute for Occupational Safety and Health

SUPPORTING ORGANIZATION NUMBER(S)
Contract No:
and/or
Control No: VMH-G21-669

PROJECT TITLE
Mortality, Medical and Industrial Hygiene Study of Workers Exposed to Nitroglycerin

INVESTIGATOR(S)
Mr. Gordon Reeve
Mr. Robert Rinsky
Dr. William Halperin

DEPARTMENT/SPECIALTY SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION
Name and Address. Including Zip Code.
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP
Start Date: October, 1979
End Date: September, 1982
Annual Funding:

PROJECT SUMMARY

About 8000 workers are exposed yearly to nitroglycerin (NG) during its manufacture. Not only is work with this agent hazardous because it is explosive, but workers also suffer from acute toxicity (headaches due to vasodilation), may have excessive numbers of sudden deaths while employed (possibly from coronary vasospasm). and may suffer from excessive cardiovascular mortality after retirement.

An opportunity exists at the Radford Arsenal in Virginia to study a cohort of 37 current workers and a much larger number of former nitroglycerin workers. A cohort mortality study (Va. deaths as comparison) would be valuable to establish the fact of excess death during employment and after separation. Since the plant physician has done periodic electrocardiograms and excluded workers with abnormalities from NG exposure, a potential exists to compare the mortality of NG workers with ECG abnormalities to NG workers with normal ECGs. This comparison would not be meaningful unless another group of non-nitroglycerin workers is followed in the same way.

These same groups would be used to determine if there is a characteristic NG abnormality on the ECG and also if abnormalities are present at the same rate in non-NG workers.

If there is excess mortality in workers long after separation from exposure, it will be valuable to investigate its cause by comparing heart disease risk factors in NG retirees compared with other retirees. Risk factors such as blood pressure, lipids, etc. would be evaluated.

CAS Registry No.
Nitroglycerin 55-63-0

The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024Oak Ridge, TN 37830 — Phone: 615- 576-1743.

Hogstedt C ; Andersson K
A cohort study on mortality among dynamite workers.
JOM; VOL 21, ISS 8, 1979, P553-6

Mouret A
Explosive oils. (Nitroglycerin, nitroglycol and related substances
Arch. Mal. Prof. Med. Trav. Secur. Soc.; VOL 39, ISS 12, 1978,671-92

Keogh JP
Nitroglycerin induced heart disease [letter]
JOM; VOL 21, ISS 3, 1979, P153

Foulger JH
The industrial nitroglycerine-nitroglycol question [letter]
JOM; VOL 20, ISS 12, 1978, P789, 791-2

Garvey LH ; et al
DHEW (NIOSH) Publ. (U.S.) No. 78-167: Criteria for a Recommended Standard. Occupational Exposure to Nitroglycerin and Ethylene Glycol Dinitrate
1978,215 pp.

Morton WE
Occupational habituation to aliphatic nitrates and the withdrawal hazards of coronary disease and hypertension.
J Occup Med; VOL 19, ISS 3, 1977, P197-200 (REF: 74)

Ku˘zelov´a M@KUZELOVA M ; Cerm´akov´a B@CERMAKOVA B
[Cases of sudden death as a consequence of long-term work with nitric esters of glycerine]
Vnitr Lek; VOL 20, ISS 5, 1974, P447-51

Klock JC
Nonocclusive coronary disease after chronic exposure to nitrates: evidence for physiologic nitrate dependence.
Am Heart J; VOL 89, ISS 4, 1975, P510-3

Minami M ; Sato M ; Yamamura K
Effect of sodium nitrite on catechol amine metabolism. Pathogenesis of cardiac angina-like fit in dynamite factories
Tokyo Joshi Ika Daigaku Zasshi; VOL 43, ISS 10, 1973,832-7

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION:
National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No; and/or Control No: VMH-G21-672

PROJECT TITLE:
Medical and Industrial Hygiene Study of Workers Exposed to 4,6-Dinitro-2-sec-butylphenol (DNBP)

INVESTIGATOR(S):
Dr. William Halperin
Mr. Michael Crandall

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date: October, 1979
End Date: May, 1981
Annual Funding:

PROJECT SUMMARY:

The herbicide 4,6-Dinitro-2-sec-butylphenol (DNBP) has been demonstrated to have adverse effects such as testicular atrophy in studies with rats (Hall, L. et al. Subchronic and Reproductive Toxicity of Denoseb. Toxicol. Appl. Pharm. 45(1):235-236, 1978). If a cohort of sufficient size can be located, exposed individuals and appropriate controls will be interviewed, examined, and tested for testicular as well as other effects.

CAS Registry No.
4,6-Dinitro-2-sec-butylphenol (DNBP) 88-85-7

Sponsored by ● Toxicology Information Subcommittee ● DHEW Committee to Coordinate Toxicology and Related Programs

**The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.**

WEBER T ; BERENCSI G
Data on safety gloves protection against pesticides.
INT ARCH ARBEITSMED; 30 (1). 1972 23-30

Potts GR
Pesticides and the fertility of the grey partridge, Perdix perdix
J. Reprod. Fert., Suppl.; VOL 19,, 1973,391-402

Curley A ; Linder RE
ACUTE, SUB-ACUTE AND CHRONIC TOXICITY STUDIES IN EXPERIMENTAL ANIMAL MODELS UTILIZING ORAL AND DERMAL DOSING
Toxicology Research Projects Directory, Vol.04 iss.04 1979

McLeese DW ; Zitko V ; Peterson MR
Structure-lethality relationships for phenols, anilines and other aromatic compounds in shrimp and clams.
Chemosphere 8(2): 53-57 1979 (6 References)

Quidet P
Results of investigations made in France in 1972, 1973, 1974 on the causes of mortality in game species. Influence of pesticides and evaluation of the risks with respect to the nature of the products.
Phytoma 269: 26-32 1975

McCorkle FM ; Chambers JE ; Yarbrough JD
Acute toxicities of selected herbicides to fingerling channel catfish, Ictalurus punctatus.
Bull. Environ. Contam. Toxicol. 18(3): 267-270 1977 (7 References)

INOUYE B ; OGINO Y ; ISHIDA T ; OGATA M ; UTSUMI K
Effects of phthalate esters on mitochondrial oxidative phosphorylation in the rat.
TOXICOL APPL PHARMACOL; 43 (1). 1978 189-198

LAFORNARA JP
Cleanup after spills of toxic substances.
J WATER POLLUT CONTROL FED; 50 (4). 1978 617-627

Ferm R ; Renberg L
An industrial cover-up: the case of BT Kemi.
Ambio 7(5-6): 211-217 1978 (11 References)

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20014
Tel. (301) 496-1131

SUPPORTING ORGANIZATION:
National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMH-G21-673

PROJECT TITLE:
Mortality Study of Workers Exposed to Carbon Monoxide

INVESTIGATOR(S):
Dr. William Halperin
Mr. Richard Lemen

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP
Start Date: October, 1979
End Date: August, 1981
Annual Funding:

PROJECT SUMMARY

Carbon monoxide is a commonly encountered industrial asphyxiant, and the effects of acute exposure have been fairly well studied. Although little is known about the effects of chronic exposure in man, ambient air levels have been linked to the probability of surviving a myocardial infarction. In animals, chronic exposure is linked with lowering of the ventricular fibrillation threshold. NIOSH has conducted a study of possible chronic effects from CO exposure in motor vehicle inspectors with chronic exposure of 15 ppm with equivocal results. An opportunity may exist to study car tunnel workers with exposures of 70 ppm.

CAS Registry No.
Carbon monoxide 630-08-0

**The bibliographic references (author, title, source) on this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches, made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830 — Phone: 615- 576-1743.**

Zenz C
The epidemiology of carbon monoxide in cardiovascular disease in industrial environments: a review.
Prev Med; VOL 8, ISS 3, 1979, P279-88 (REF: 45)

Rosenman KD
Cardiovascular disease and environmental exposure.
Br J Ind Med; VOL 36, ISS 2, 1979, P85-97

Zorina LA ; Mel'nikova MM ; Saitanov AO ; Teterin VA
Pathogenesis and clinical profile in chronic carbon monoxide poisoning
Sov. Med.; ISS 12, 1978,67-71

Hearl F
MORBIDITY AND INDUSTRIAL HYGIENE STUDY OF DIESEL EMISSIONS IN COAL MINES
Toxicology Research Projects Directory, Vol.04 iss.02 1979
Epidemiology Research Projects Directory, 1979

Barrowcliff DF
Chronic carbon monoxide poisoning caused by methylene chloride paintstripper.
Med Sci Law; VOL 18, ISS 4, 1978, P238

Bauer S ; Sofronievska Z ; Orusev T
Occupational exposure of metallurgical industry workers to carbon monoxide
God. Zb. Med. Fak. Skopje; VOL 23,, 1977,241-4

Rogowsky M ; Vander Putten M ; Baudoux A
Critical study of the formation of carboxyhemoglobin among welders working in a low level carbon monoxide environment
Arch. Mal. Prof. Med. Trav. Secur. Soc.; VOL 39, ISS 3, 1978,151-61

Ferris BG Jr
Health effects of exposure to low levels of regulated air pollutants: a critical review.
J Air Pollut Control Assoc; VOL 28, ISS 5, 1978, P482-97 (REF: 142)

# CUMULATED INDEXES

## Issues 1 to 43

This December 1979 issue carries the Index of Compounds and Index of Institutions and Investigators cumulated since Issue No. 1.

THESE INDEXES WILL NOT BE REPRINTED.

Commencing with the January 1980 issue of TOX-TIPS, the indexes will be cumulated on the schedule followed previously.

## ANNUAL INDEX OF COMPOUNDS

Acacia
  Mouse - diet - 2-year...6:25
  Rat - diet - 2-year...6:25
Acephate
  E. coli - mutagenesis...23:31
  Human lung fibroblast culture - mutagenesis...23:31
  Saccharomyces cerevisiae - mutagenesis...23:31
  Salmonella typhimurium - mutagenesis...23:31
Acetamide
  Wasp - diet - mutagenesis...31:39
Acetamide, N,N-dimethyl-
  DNA synthesis bioassay - mutagenesis...37:21
  Drosophila melanogaster - mutagenesis...37:21
  Mouse - inhalation - mutagenesis...37:21
  Rat - inhalation - mutagenesis...37:21
Acetic acid, 10%
  Rabbit - instilled in eye...2:18
Acetic acid, nitrilotri-, trisodium salt
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 177/AS (NCI #C01445).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 177/AS (NCI #C01445).
Acetohexamide
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-284 673/AS (NCI #C03247).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-284 673/AS (NCI #C03247).
2-Acetylaminofluorene
  Mouse - feed - lifespan...18:11
Acetylated diamylopectin phosphate
  Rat - oral - 2-year...Food Cosmet. Toxicol. 12(5/6), 651 (1974)
Acetylated distarch phosphate
  Rat - oral - 2-year...Food Cosmet. Toxicol. 12(5/6), 651 (1974)
Acetylene dichloride
  Mouse - gavage - 2-year...6:15, 6:17
  Rat - gavage - 2-year...6:15, 6:17
Acid Black 52
  Hamster - feed - carcinogenesis...37:41
  Hamster - intratracheal - carcinogenesis...37:41
  Rat - feed - carcinogenesis...37:41
  Rat - intratracheal - carcinogenesis...37:41
Acronycine
  Mouse - intraperitoneal - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 347/AS (NCI #C01536).
  Rat - intraperitoneal - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 347/AS (NCI #C01536).
Acrylamide
  Rat - drinking water - 14-week...18:39, 18:41
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Acrylates
  Human - workplace exposure - epidemiology...40:29
Acrylonitrile
  Bacteria - 8:29
  Dog - drinking water - 180-day...8:37
  Mouse - inhalation - 90-day...8:35
  Mouse - inhalation - 2-year...7:9
  Mouse - intramuscular injection - 3-month...28:37
  Mouse - lymphoma...8:29
  Mouse - topical - 3-month...28:37
  Rat - drinking water...8:37
  Rat - drinking water - 90-day...8:37
  Rat - drinking water - 2-year...8:37
  Rat - drinking water - 3-generation...8:39
  Rat - gavage...8:33
  Rat - inhalation - 8:31, 8:33
  Rat - inhalation - 90-day...8:35
  Rat - inhalation - 2-year...7:9, 8:35
  Rat - oral...8:31
Adrenocortical steroids, synthetic
  Human - workplace exposure - epidemiology...36:25
Adriablastina, with cysteamine
  Rat - intravenous injection...4:11
Adriamycin, with cysteamine
  Rat - intravenous injection...4:11
Aerosol cosmetics
  Dog - inhalation...8:23
  Hamster - inhalation - lifespan...8:23
Aerosol products
  Two unidentified species...2:17
Aflatoxin B1
  Rat - gavage - 3-week...25:21
  Rat - intubation - carcinogenicity...40:23
Aflatoxin B2, G1, and G2
  Rainbow trout - ingestion - 1-year...17:29
Aflatoxin M1
  Rat - gavage - 3-week...25:19
  Rat - intubation - carcinogenicity...40:23
Agar agar
  Mouse - diet - 2-year...6:19
  Rat - diet - 2-year...6:19
L-Alanosine
  Rabbit - intravenous - 11-day...15:29
  Rat - intraperitoneal injection - 62-day...15:27
Alarm bells (with Sonalert and jet engine noise)
  Mouse - whole body - teratogenesis...32:23
Aldicarb
  Mouse - diet - 2-year...22:11
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-275 666/AS (NCI #C00044).
  Rat - diet - 2-year...22:11
  Rat - feed - carcinogenesis...National

Cancer Institute Bioassay Report available from NTIS, order number PB-275 666/AS (NCI #C00044).
Aldrin
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(2), 187 (1962)
Alkenyl (C14-C18) sulfonate
  Rat - oral - 2-year...Toxicology 5 (3), 359 (1976)
Alkylbenzesulfonate (linear)
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 18, 83 (1971)
Alkyldimethylbenzyl ammonium chloride, see Roccal
Alkyl ketene dimer
  Rat - oral - 2-year...Hercules Inc., unpub. data
Alkyl (C9-C15) tolyl methyl trimethyl ammonium chloride, see Hyamine 2389
Allethrin
  Rat - oral 2-year - Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Allyl caproate
  Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)
Allyl chloride
  DNA synthesis bioassay - mutagenesis...37:33
  Drosophila melanogaster - mutagenesis...37:33
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 516/AS (NCI #C04615).
  Mouse - inhalation - mutagenesis...37:33
  Mouse - inhalation - 18-week...19:3
  Mouse - skin test - lifespan...10:15
  Mouse - subcutaneous injection - lifespan...10:15
  Rabbit - inhalation - 8-month...19:5
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 516/AS (NCI #C04615).
  Rat - inhalation - mutagenesis...37:33
  Rat - inhalation - 18-week...19:3
  Rat - inhalation - 8-month...19:5
Allylisothiocyanate
  Mouse - gavage - 2-year...7:35
  Rat - gavage - 2-year...7:35
Alpha cellulose
  Rat - ingestion - 2-year...11:7
  Rat - ingestion - 3-generation...12:33
Aluminum reduction industry
  Human - workplace exposure - epidemiology...36:7
Aluminum sulfate
  Rat - inhalation - 6-week...11:19
Aluminum sulfate, particulate
  Guinea pig - inhalation - 60-day...9:17
  Rat - inhalation - 60-day..9:17
Amiben
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5, 349 (1964)
Aminoanthraquinone
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 739/AS (NCI #C01876).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 739/AS (NCI #C01876).
4-Aminobiphenyl, see Benzidine
Amino-4-ethoxyacetanilide
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 194/AS (NCI #C01887).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 194/AS (NCI #C01887).
Amino-2-methylanthraquinone
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 852/AS (NCI #C01901).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 852/AS (NCI #C01901).
Amino-2-nitrophenol
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 189/AS (NCI #C03963).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 189/AS (NCI #C03963).
Amino-5-nitrothiazole
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 346/AS (NCI #C03065).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 346/AS (NCI #C03065)
2-Aminotoluene
  Bacteria - mutagenesis...26:5
  Cultured mouse cells - mutagenesis...26:5
1-Aminoundecanoic acid
  Mouse - diet - 2-year...5:31
  Rat - diet - 2-year...5:31
Ammonia
  Rat - inhalation - 1-year...12:9
Ammonium hydroxide, 10%
  Rabbit - instilled in eye...2:18
Ammonium sulfamate
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7, 497 (1965)

- Ammonium sulfate
  - Donkey - inhalation - 6-month...16:31
- Amorphous silica
  - Guinea pig - inhalation - 15-month...15:41
  - Monkey - inhalation - 15-month...15:41
  - Rat - inhalation - lifetime...15:41
- Amosite asbestos
  - Rat - intrapleural inoculation - lifespan...12:15
  - Rat - intratracheal inoculation - lifespan...12:15
- Anagestone acetate
  - Dog - intravenous - lifespan...18:3
  - Monkey - intravenous - lifespan...18:3
- Anagestone acetate and mestranol
  - Monkey - oral - long term...39:23
- Anilazine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 141/AS (NCI #C08684).
  - Mouse - feed - 2-year...21:35
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 141/AS (NCI #C08684).
  - Rat - feed - 2-year...21:35
- Aniline
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
- Aniline hydrochloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 539/AS (NCI #C03736).
  - Rat - diet - 2-year...13:7
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 539/AS (NCI #C03736).
- o-Anisidine hydrochloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 879/AS (NCI #C03747).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 879/AS (NCI #C03747).
- p-Anisidine hydrochloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 951/AS (NCI #C03758).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 951/AS (NCI #C03758).
- Anthranilic acid
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 883/AS (NCI #C01730).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 883/AS (NCI #C01730).
- Antimony arsenate, in Mg-deficient diet
  - Rat - intratracheal injection - 6-month...28:3
- Antimony chloride
  - Rat - oral - 2-year...Chemicals in Foods: A Report to Food and Drug Officials on Current Developments, Part II. Pesticides 16 (2), 47 (1952)
- Antimony ore concentrates
  - Rat - inhalation - carcinogenicity...41:5
- Antimony trioxide
  - Rat - inhalation - carcinogenicity...41:5
- ANTU
  - Rat - oral - 2-year...Proc. Soc. Exp. Biol. Med. 64(3), 305 (1947)
- Aramite
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(1), 70 (1962)
- Arochlor 1254 (Polychlorinated biphenyl mixture)
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 624/AS (NCI #C02664).
- Aroclor 1248
  - Monkey - diet - 18-month...33:13
  - Monkey - diet - 2-year...34:3
- Arsanilic acid
  - Rat - oral - 2-year...World's Poul. Congr., Proc., 12th, 1962
- Arsenic
  - Daphnia - aquarium water - 28-day...17:23
  - Oyster - aquarium water - 28-day...17:25
  - Shrimp - aquarium water - 28-day...17:25
  - Snail - aquarium water - 28-day...17:23
  - Stonefly - aquarium water - 28-day...17:23
- Arsenic acid
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(4), 526 (1963)
- Asbestos
  - Hamster - feed - lifespan...18:23, 18:29
  - Hamster - gavage - lifespan...18:25
  - Human - gold miners workplace exposure - epidemiology...35:31
  - Monkey - inhalation - 18-month...28:11
  - Mouse - intratracheal instillation - 5-week...22:3, 22:5
  - Mouse - intravenous - lifespan...18:5
  - Rat - feed - lifespan...18:19, 18:27
  - Rat - gavage - lifespan...18:21
  - Rat - injection - 1-year...22:3
  - Rat - intravenous - lifespan...18:5
  - Rat - inhalation - 18-month...28:11
- Asbestos (brakelinings)
  - Human - workplace exposure - epidemiology...36:15
- Asbestos (floor tile ingredient)
  - Human - epidemiology...1:13

Asbestos, see also Amosite asbestos
Ascorbic acid
  Mouse - diet - 2-year...29:13
1-Ascorbyl palmitate
  Rat - oral - 2-year...Proc. Soc. Exp. Biol. Med. 61, 195 (1946)
Aspartame
  Rat - diet...8:5
  Rat - diet - behavioral teratology...39:29
  Rat - diet - neurobehavioral effects...39:29
L-Aspartic acid, N-(phosphonoacetyl)-, tetrasodium salt
  Dog - intravenous - 1-year...16:17
  Monkey - intravenous - 1-year...16:17
  Mouse - oral - 30-day...16:17
Aspirin, phenacetin, and caffeine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-284 684/AS (NCI #C02697).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-284 684/AS (NCI #C02697).
Aspon
  E. coli - mutagenesis...22:15
  Human lung culture - mutagenesis...22:15
  Saccharomyces cerevisiae - mutagenesis...22:15
  Salmonella typhimurium - mutagenesis...22:15
AT-125
  Dog - intravenous - 55-day...29:7
  Dog - intravenous - 78-day...29:7
  Dog - intravenous - 81-day...29:7
Atropine
  Rat - slow release tablet - gestation...24:23
Attapulgite clay
  Human - workplace exposure - epidemiology...40:27
Automobile exhaust
  Cat - inhalation - 90-day...9:13
  Guinea pig - inhalation - 90-day...9:13
  Mouse - inhalation - 3-month...13:17
  Rat - inhalation - 90-day...9:13
Automobile exhaust, catalyst-treated
  Guinea pig - inhalation...12-week...11:17
  Mouse - inhalation - 6-month...11:13
  Rat - inhalation - 13-week...10:25
Automobile exhaust, non-catalyst-treated
  Rat - inhalation - 13-week...10:25
Azacytidine 5
  Mouse - intraperitoneal - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 526/AS (NCI #C01569).
  Rat - intraperitoneal - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 526/AS (NCI #C01569).
Azinphosmethyl
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 371/AS (NCI #C00066).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 371/AS (NCI #C00066).
Azobenzene
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 835/AS (NCI #C02926).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 835/AS (NCI #C02926).
AZQ
  Dog - intravenous - 55-day...29:9
  Dog - intravenous - 78-day...29:9
  Dog - intravenous - 81-day...29:9
Barium chloride
  Rat - oral - 2-year...In Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)
Baygon
  Rat - pest control strip - 30-day...22:29
BCNU
  Dog - intravenous - 55-day...11:11
  Dog - intravenous - 78-day...11:11
  Dog - intravenous - 81-day...11:11
BCPE
  Mouse - gavage - 2-year...29:17
Benzanthracene
  Mouse - skin painting - 20-week...27:41
Benzene
  Human - inhalation - epidemiology...32:3
  Human - skin...42:21
  Monkey - skin...42:21
  Mouse - gavage - gestation...20:31
  Mouse - intramuscular injection - 3-month...28:41
  Mouse - topical - 3-month...28:41
  Rat - inhalation - cytogenetic effects...39:19
  Rat - inhalation - gestation...20:7, 23:23
Benzene, with phenolbarbital pre-treatment
  Rat - inhalation - cytogenetic effects...39:19
Benzene hexachloride, technical mixture; and the alpha, beta, and gamma isomers
  Rat - oral - 2-year...In Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)
Benzidine
  Mouse - drinking water - 18-Month...18:7
  Mouse - drinking water - lifespan...18:15
  Mouse - injection - 60-day...9:39
  Mouse - injection - 40-week...9:39
  Mouse - injection - 560-day...9:39
  Wasp - diet - mutagenesis...34:25
Benzidine dihydrochloride

  Mouse - drinking water - lifespan...18:9
Benzo (a) pyrene
  Human - skin...42:27
  Flounder - aquarium water - unspecified...17:27
  Hamster - intratracheal instillation - 16-week...15:25
  Monkey - skin...42:27
  Mouse - intraperitoneal injection - 1-year...15:31
  Mouse - skin painting - 15-month...26:17
Benzo (e) pyrene, and 12-o-tetradecanoylphorbol 13-acetate
  Mouse - skin - 50-week...32:11
Benzo (g) pyrene
  Mouse - oral - gestation...18:33
Benzoic acid
  Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org. 228 (1962)
2H-1-Benzopyron-2-one, see Coumarin
1H-Benzotriazole
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 202/AS (NCI #C03521).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 202/AS (NCI #C03521).
Benzoyl peroxide
  Drosophila melanogaster - mutagenesis...26:39
Benzthiazuron
  Mouse - diet - 6-month...30:11
Benzthiazuron (with nitrite)
  Mouse - diet - 6-month...30:11
Benzyl chloride
  Human - workplace exposure...36:33
  Mouse - intraperitoneal - 2-year...31:29
  Rat - intraperitoneal - 2-year...31:29
Beryllium
  Mouse - intraperitoneal injection - lifetime...12:37
BHA, see Butylated hydroxyanisole
BHC, see Benzene hexachloride
BHT, see Butylated hydroxytoluene
Biphenyl
  Rat - gavage - teratology...11:31
2-Biphenylamine
  Mouse - diet - 2-year...29:15
  Rat - diet - 2-year...29:15
3(2-Biphenylyloxy)-1,2-epoxypropane
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Bis(2-chloroethyl) ether
  Mouse - gavage - 2-year...33:21
  Rat - intubation - 60-day...10:35
  Salmonella typhimurium - mutagenesis...10:35
Bis(2-chloroisopropyl) ether
  Rat - intubation - 60-day...10:35
  Salmonella typhimurium - mutagenesis...10:35
Bis(chloromethyl)ether
  Rat - inhalation...1:5
Bis(2-Chloro-1-Methylethyl) Ether
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 741/AS (NCI #C50044A).
Bis(p-chlorophenoxy)methane
  Rat - oral - 2-year...J. Agr. Food Chem. 11 (6), 468 (1963)
Bis-(1,1-hydroperoxy-1,1-methyl)diethyl peroxide, with 2,2-dihydroperoxy propane
  Rat - oral - 2-year...Food Cosmet. Toxicol. 5, 309 (1967)
Bis(2-methoxyethoxyethyl) ether
  DNA synthesis bioassay - mutagenesis...37:27
  Drosophila melanogaster - mutagenesis...37:27
  Mouse - inhalation - mutagenesis...37:27
  Rat - inhalation - mutagenesis...37:27
Bismuth citrate
  Rat - intravenous - 6-month...13:11
Bismuth phosphate
  Rat - intravenous - 6-month...13:11
Bismuth subnitrate
  Rat - intravenous - 6-month...13:11
Bisphenol A
  Mouse - diet - 2-year...5:27
  Rat - diet - 2-year...5:27
Biurea
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7(3), 445 (1965)
Black PN
  Rat - oral - 2-year...Food Cosmet. Toxicol. 10,17 (1972)
Borax
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 23 (3), 351 (1972)
Boric acid
  Rat - oral - 2-year...Toxicol. Appl Pharmacol. 23(3), 351 (1972).
Boron
  Rat - ingestion - 3-generation...17:35
BPPD
  Mouse - ingestion - 1 1/2-year...14:13
Bromacil
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 34 (2), 189 (1975)
Brominated benzene compounds
  Rat - 120-day...9:19
Brominated vegetable oil
  Rat - diet - behavioral toxicology...39:39
  Rat - diet - neurobiological effects...39:39
Bromoethylene
  Mouse - skin application...3:5
  Mouse - subcutaneous injection...3:5
  Rat - intragastric intubation...3:5
2-Bromo-2-nitro-1,3-propanediol
  Rat - inhalation - 18-months...26:25
1,3-Butadiene
  Mouse - inhalation - 2-year...7:5
  Rat - inhalation - 90-day...23:3

Rat - inhalation - 2-year...7:5
Butoxy polyethylenepolypropylene glycol, see
  Ucon HB 260
Butoxypolypropylene glycol (mol. wt. 800)
  Rat - oral 2-year...J.Agr. Food Chem.
    11(6), 468 (1963)
n-Butyl acrylate
  Rat - inhalation - 2-year...32:5
Butyl rubber
  Rat - inhalation...43:9
Butylated hydroxyanisole
  Drosophila melanogaster - feed - mutagenesis...27:21
  Rat - oral - 2-year...Joint FAO/WHO
    Expert Committee on Food Additives
    --Sixth Report. Evaluation of the Toxicity
    of a Number of Antimicrobiols and
    Antioxidants. Tech. Rep. Ser. Wld.
    Hlth. Org. 228 (1962)
  Rat - diet - neurobehavioral effects...39:31
  Rat - diet - behavioral teratology...39:31
Butylated hydroxytoluene
  Drosophila melanogaster - feed - mutagenesis...27:23
  Mouse - feed - 8-week...27:31
  Rat - diet - behavioral teratology...39:33
  Rat - diet...8:5
  Rat - diet - neurobiological effects...39:33
  Rat - oral - 2-year...Joint FAO/WHO
    Expert Committee on Food Additives
    --Ninth Report. Specifications for the
    Identity and Purity of Food Additives
    and Their Toxicological Evaluation:
    Some Antimicrobials, Antioxidants,
    Emulsifiers, Stabilizers, Flour-
    Treatment Agents, Acids and Bases.
    Tech. Rep. Ser. Wld. Hlth. Org. 339
    (1966)
  Wasp - diet - mutagenesis...32:39
Butylbenzylphthalate
  Mouse - diet - 2-year...6:35
  Rat - diet - 2-year...6:35
Butyl-3,4-dihydro-2,2-dimethyl-4-oxo-1-
  2H-pyran-6-carboxylate, see Indalone
1,3-Butylene glycol
  Rat - oral - 2-year...Toxicol. Appl.
  Pharmacol. 5, 358 (1964)
Butylene glycol adipic acid polyester,
  see Santicizer 334F
Butylene oxide
  DNA synthesis bioassay - mutagenesis...37:11
  Drosophila melanogaster - mutagenesis...37:11
  Mouse - inhalation - mutagenesis...37:11
  Rabbit - inhalation - teratogenesis...37:7
  Rat - inhalation - mutagenesis...37:11
  Rat - inhalation - teratogenesis...37:5
tert-Butylhydroquinone
  Rat - diet - behavioral toxicology...39:41
  Rat - diet - neurobiological effects...39:41
2-(para-tert-Buytlphenoxy) isopropyl 2'-
  chloroethyl sulfite, see Aramite
4-tert-Butylphenyl salicylate
  Rat - oral - 2-year...J. Agr. Food Chem.
    11(6), 468 (1963)
Butyl stearate
  Rat - oral - 2-year...AMA Arch. Ind.
    Hyg. Occup. Med. 7, 310 (1953)
Cacodylic acid
  Rat - inhalation - 90-day...19:33
Cadmium
  Monkey - drinking water - 1-year...22:31
  Mouse - drinking water - 12-month...11:21
  Oyster - aquarium water - 1-month...17:25
  Rabbit - drinking water - 4-month...11:23
  Rat - subcutaneous - gestation...31:11
  Shrimp - aquarium water - 1-month...17:25
Cadmium acetate
  Mouse - ingestion - 18-month...14-19
  Rat - drinking water - 150-day...13:19
  Rat - ingestion - 18-month...14-19
Cadmium and zinc
  Rat - feed - 15-month...9:41
Cadmium arsenate, in Mg-deficient diet
  Rat - intratracheal injection -
    6-month...28:3
Cadmium chloride
  Rat - diet - 45-day...15:21
  Rat - drinking water - 160-day...12:25
  Rat - drinking water - 5-month...17:13
  Rat - oral - 2-year...Chemicals in Foods:
    A Report to the Food and Drug Officials
    on Current Developments, Part II.
    Pesticides 16(2), 47 (1952)
Calcium carageenan
  Rat - diet...8:5
  Rat - diet - several generations...8:7,
    8:11, 8:13
Calcium cyanamide
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-293 625/AS
    (NCI #C02937).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-293 625/AS
    (NCI #C02937).
Calcium disodium ethylenediaminetetraacetate
  Rat - oral - 2-year...Toxicol. Appl.
    Pharmacol. 5(2), 142 (1963)
Calcium disodium versenate
  Rat - intravenous - 12-week...15:19
Calcium fluoride
  Guinea pig - inhalation - 4-month...10:41
Calcium sulfate, particulate
  Guinea pig - inhalation - 60-day...9:17
  Rat - inhalation - 60-day...9:17
Caprolactam
  Mouse - diet - 2-year...5:25
  Rat - diet - 2-year...5:25
Captan
  Chinese hamster lung cells - mutagenesis...21:31
  Cultured mouse cells - mutagenesis...21:31

- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 475/AS (NCI #C00077).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 475/AS (NCI #C00077).
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Carbarsone
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 9, 528 (1966)

Carbaryl
- Mouse - diet - 6-month...30:13

Carbaryl (with nitrite)
- Mouse - diet - 6-month...30:13

Carbazole, 3-amino-9-ethyl-, hydrochlor
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 126/AS (NCI #C03043).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 126/AS (NCI #C03043).

Carbofuran
- E. coli - mutagenesis...22:17
- Human lung culture - mutagenesis...22:17
- Saccharomyces cerevisiae - mutagenesis...22:17
- Salmonella typhimurium - mutagenesis...22:17

Carbon
- Mouse - inhalation - 6-month...13:15

Carbon disulfide
- Human - workplace exposure - epidemiology ...35:37
- Rabbit - inhalation - teratology...19:13
- Rat - inhalation - teratology...19:13

Carbon monoxide
- Human - inhalation - epidemiology...43:25

Carbon monoxide, and high/low salt diets
- Rat...39:17

Carboxymethylcellulose
- Rat - oral - 2-year...Food Res. 13, 29 (1948)

Carbromal
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 130/AS (NCI #C03805).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 130/AS (NCI #C03805).

Carmoisine
- Mouse - diet...4:4
- Rat - diet...4:4
- Rat - oral - 2-year...Food Cosmet. Toxicol. 12(5/6), 601 (1974).

Carob gum
- Mouse - diet - 2-year...6:27
- Rat - diet - 2-year...6:27

beta-Carotene
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 2(2), 225 (1960)

Catechol
- Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)

Chloramben
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 065/AS (NCI #C00055).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-273 065/AS (NCI #C00055).

Chlorbenside
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. The Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Chlorbenside, sulphone derivative
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Chlorbenzilate
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 123/AS (NCI #C00408).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 123/AS (NCI #C00408).

Chlordan
- Rat - oral - 2-year...In Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)

Chlordane
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-271 977/AS (NCI #C00099).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-271 977/AS (NCI #C00099).

Chlordecone
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 041/AS (NCI #C00191).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 041/AS (NCI #C00191).

Chlordiazepoxide (with sodium nitrite)
  Rat - diet - 2-year...30:23
Chlorinated benzene compounds
  Rat - 120-day...9:19
Chlorinated hydrocarbons
  Human - workplace exposure...36:33
Chlorinated organic compounds
  Daphnia - aquatic environment...45-day...12:41
Chlorinated paraffin C10-12 (60% Cl)
  Common mussel - 1-yr. maximum - 38:25
  Mysid shrimp - 1-yr. maximum - 38:25
  Rainbow trout - 1-yr. maximum - 38:25
Chlorinated paraffin C10-12 (60%Cl)
  Rabbit - teratogenesis...38:21
  Rat - diet - reproduction study...38:29
Chlorinated paraffin C10-12 (60% Cl)
  Rat - teratogenesis...38:19
Chlorinated paraffin C10-12 (60% Cl)
  Rat bone marrow - mutagenesis...38:17
Chlorinated paraffin C10-12 (60% Cl)
  Rat - dominant lethal - mutagenesis...38:15
Chlorinated paraffin C10-12 (60% Cl)
  Cell transformation - mutagenesis...38:13
Chlorinated paraffin C10-12 (60% Cl)
  Rat - diet - 13-week..38:11
Chlorinated paraffin C10-12 (60% Cl)
  Rat - diet - 13-week...38:11
Chlorinated paraffin C10-12 (60% Cl)
  Rat - intubation - 14-day...38:9
Chlorinated paraffin C10-12 (60% Cl)
  Rat - diet - 14-day...38:7
Chlorinated paraffin C10-12 (60% Cl)
  Rat - gavage - acute...38:5
Chlorinated paraffin C14-16 (52% Cl)
  Rabbit - teratogenesis...38:21
Chlorinated paraffin C14-16 (52% Cl)
  Rat - teratogenesis...38:19
Chlorinated paraffin C14-16 (52% Cl)
  Rat bone marrow - mutagenesis...38:17
Chlorinated paraffin C14-16 (52% Cl)
  Rat - diet - 13-week...38:11
Chlorinated paraffin C14-16 (52% Cl)
  Common mussel - 1-yr. maximum - 38:25
  Mysid shrimp - 1-yr. maximum - 38:25
  Rainbow trout - 1-yr. maximum - 38:25
Chlorinated paraffin C14-16 (52% Cl)
  Rat - intubation - 14-day...38:9
Chlorinated paraffin C14-16 (52% Cl)
  Rat - diet - 14-day...38:7
Chlorinated paraffin C14-16 (52% Cl)
  Rat - gavage - acute...38:5
Chlorinated paraffin C22-26 (40% Cl)
  Common mussel - 1-yr. maximum - 38:25
  Mysid shrimp - 1-yr. maximum - 38:25
  Rainbow trout - 1-yr. maximum - 38:25
Chlorinated paraffin C22-26 (40% Cl)
  Rabbit - teratogenesis...38:21
Chlorinated paraffin C22-26 (40% Cl)
  Rat - teratogenesis...38:19
Chlorinated paraffin C22-26 (40% Cl)
  Rat bone marrow - mutagenesis...38:17
Chlorinated paraffin C22-26 (40% Cl)
  Rat - diet - 13-week...38:11
Chlorinated paraffin C22-26 (40% Cl)
  Rat - intubation - 14-day...38:9
Chlorinated paraffin C22-26 (40% Cl)
  Rat - diet - 14-day...38:7
Chlorinated paraffin C22-26 (40% Cl)
  Rat - gavage - acute...38:5
Chlorinated paraffin C22-26 (70% Cl)
  Common mussel - 1-yr. maximum - 38:25
  Mysid shrimp - 1-yr. maximum - 38:25
  Rainbow trout - 1-yr. maximum - 38:25
Chlorinated paraffin C22-26 (70% Cl)
  Rabbit - teratogenesis...38:21
Chlorinated paraffin C22-26 (70% Cl)
  Rat - teratogenesis...38:19
Chlorinated paraffin C22-26 (70% Cl)
  Rat bone marrow - mutagenesis...38:17
Chlorinated paraffin C22-26 (70% Cl)
  Cell transformation - mutagenesis...38:13
Chlorinated paraffin C22-26 (70% Cl)
  Rat - diet - 13-week...38:11
Chlorinated paraffin C22-26 (70% Cl)
  Rat - intubation - 14-day...38:9
Chlorinated paraffin C22-26 (70% Cl)
  Rat - diet - 14-day...38:7
Chlorinated paraffin C22-26 (70% Cl)
  Rat - gavage - acute...38:5
Chlorine (free in water)
  Rat - oral - 2-year...Food Cosmet.
    Toxicol. 6, 147 (1968)
Chloroacetaldehyde
  Mouse - skin...2:4
  Mouse - subcutaneous injection...2:4
  Mouse - intragastric feeding...2:4
Chloroacetyl acetanilide
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-288 754/AS
    (NCI #C03770).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-288 754/AS
    (NCI #C03770).
p-Chloroaniline
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-295 896/AS
    (NCI #C02039A).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-295 896/AS
    (NCI #C02039A).
p-Chlorobenzyl p-chlorophenyl sulfide, see
    Chlorbenside
2-Chloro-1,3-butadiene
  Rat - inhalation...3:4

- 2-Chloroethanol
  - Mouse - gavage - 2-year...5:23
  - Rat - gavage - 2-year...5:23
- 1-(2-Chloroethyl)3-(2,6-dioxo-3-piperidyl)-1-nitrosourea, see PCNU
- Chloroethynyl norgestrel and mestranol
  - Monkey - oral - long term...39:23
- (2-Chloroethyl)trimethylammonium chloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 627/AS (NCI #C02960).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 627/AS (NCI #C02960).
- 2-(Chloromethyl)pyridine hydrochloride
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 895/AS (NCI #C03907).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 895/AS (NCI #C03907).
- Chloroform
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 018/AS (NCI #C02686).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-264 018/AS (NCI #C02686).
- p-Chlorophenyl p-chlorobenzene sulfonate
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
- p-Chlorophenyl phenyl sulfone, see Sulphenone
- beta-Chloroprene
  - Rat - inhalation...3:4
  - Hamsters - inhalation - 2-year...13:31
- alpha-Chloropropylaldehyde
  - Mouse - intragastric feeding...2:11
  - Mouse - skin...2:11
  - Mouse - subcutaneous injection...2:11
- Chloropropamide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS order number PB-275 178/AS (NCI #C01752).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS order number PB-275 178/AS (NCI #C01752).
- 1-Chloropropene, cis and trans
  - Mouse - intragastric feeding...2:14
  - Mouse - skin...2:14
  - Mouse - subcutaneous injection...2:14
- 1-Chloropropyl epoxide, cis and trans
  - Mouse - skin...2:13
- 5-Chlorosalicylic acid
  - Daphnia - aquatic environment - 45-day...12:41
- Chlorothalonil
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 369/AS (NCI #C00102).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 369/AS (NCI #C00102).
- 4-Chloro-o-toluidine hydrochloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 864/AS (NCI #C03316).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 864/AS (NCI #C03316).
- Chlorpicrin
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 311/AS (NCI #C00533).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 311/AS (NCI #C00533).
- Chlorpropamide
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 2(2), 195 (1960)
- Chlorpyrifos
  - Dog - oral - 2-year...Food Cosmet. Toxicol. 12(1), 45 (1974)
- Chlortetracycline
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 3(6), 654 (1961)
- Chocolate Brown FB
  - Mouse - oral - 80-week...Food Cosmet. Toxicol. 11(3),375 (1973)
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 10(1), 3 (1972)
- Chromic oxide pigment
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 13(3), 547 (1975)
- Chromium compounds, see also Sodium dichromate
- Chrysene and tumor promotor
  - Mouse - skin - 50-week...32:13
- C.I. Acid Orange No. 10
  - Mouse - diet...4:5
  - Rat - diet...4:5
- C.I. Acid Red No. 14
  - Mouse - diet...4:4
  - Rat - diet...4:4
- C.I. Disperse Yellow No. 3
  - Mouse - diet...4:7
  - Rat - diet...4:7
- CIPC
  - Rat - oral - 2-year...Toxicol. Appl.

Pharmacol. 2(6), 659 (1960)
Citrus Red No. 2 (C.I. 12156)
  - Rat - oral - 2-year...Proc. Univ. Otago Med. Sch. 43, 31 (1965)

C.I. Vat Yellow 4
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 821/AS (NCI #C03565).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 821/AS (NCI #C03565).

Clay, attapulgite, see Attapulgite clay

Cliquinol
  - Dog - capsule - 100-day...32:27

Clonitralid
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 124/AS (NCI #C00431).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 124/AS (NCI #C00431).

CMC, see carboxymethylcellulose

Coal-fired power plant emissions
  - Rat - intratracheal - 3-week...19:19

Coal slag
  - Rat - intratracheal injection - 9-month...28:7

Coal slag abrasive
  - Guinea pig - inhalation - 18-month...26:29
  - Monkey - inhalation - 18-month...26:29
  - Rat - inhalation - 18-month...26:29

Coal tar pitch fumes
  - Human - workplace exposure - epidemiology...38:35

Coal tar pitch volatiles
  - Human - workplace exposure - epidemiology...36:7

Cobalt
  - Mouse - intraperitoneal injection - lifetime...12:37

Coke, petroleum
  - Mouse lymphoma cells - mutagenesis...42:9
  - Rat bone marrow cells - mutagenesis...42:9
  - Salmonella typhimurium - mutagenesis...42:9

Coke, petroleum
  - Mouse lymphoma cells - mutagenesis...42:11
  - Rat bone marrow cells - mutagenesis...42:11
  - Salmonella typhimurium - mutagenesis...42:11

Coke, petroleum
  - Mouse lymphoma cells - mutagenesis...42:13
  - Rat bone marrow cells - mutagenesis...42:13
  - Salmonella typhimurium - mutagenesis...42:13

Coke, petroleum
  - Mouse lymphoma cells - mutagenesis...42:15
  - Rat bone marrow cells - mutagenesis...42:15
  - Salmonella typhimurium - mutagenesis...42:15

Coke oven workers
  - Human - workplace exposure - epidemiology...38:29

Complex industrial effluents
  - Minnow - aquarium water - 30-day...16:35

Compound 1080
  - Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)

Copper
  - Mouse - intraperitoneal injection - lifetime...12:37
  - Oyster - aquarium water - 1-month...17:25
  - Shrimp - aquarium water - 1-month...17:25

Copper chromate
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. The Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Copper slag
  - Rat - intratracheal injection - 9-month...28:7

Co-Ral
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Cottonseed oil, deodorized and nondeodorized
  - Mouse - gavage - 2-year...7:39
  - Rat - gavage - 2-year...7:39

Coumaphos
  - Mouse - diet - 2-year...22:13
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 305/AS (NCI #C08662).
  - Rat - diet - 2-year...22:13
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 305/AS (NCI #C08662).

Coumarin
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)

Coumestrol
  - Mouse - oral - reproduction...42:3
  - Mouse - oral - teratology...42:3

m-Cresidine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 188/AS (NCI #C02993).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number, PB-286 188/AS (NCI #C02993).

p-Cresidine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 188/AS (NCI #C02982).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 188/AS (NCI #C02982).

- Crotoxyphos
  - E. coli - mutagenesis...23:33
  - Human lung fibroblast culture - mutagenesis...23:33
  - Saccharomyces cerevisiae - mutagenesis...23:33
  - Salmonella typhimurium - mutagenesis...23:31
- Crude oil, fractionated and subfractionated
  - Mice - dermal - 18-month...21:5
- Cube powder
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7(4), 535 (1965)
- Cupferron
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 409/AS (NCI #C03258).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 409/AS (NCI #C03258).
- Cupric chloride
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity, Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Cutting oils
  - Mouse - skin - 78-week...18:17
- Cyanogen
  - Rat - inhalation - 6-month...17:17
- Cyclohexanone
  - DNA synthesis bioassay - mutagenesis...37:17
  - Drosophila melanogaster - mutagenesis...37:17
  - Mouse - drinking water - 2-year...30:17
  - Mouse - inhalation - mutagenesis...37:17
  - Rat - drinking water - 2-year...30:17
  - Rat - inhalation - mutagenesis...37:17
- Cysteamine, with Adriamycin
  - Rat - intravenous injection...4:11
- 2,4-D
  - Dog - oral - 2-year...Toxicol. Appl. Pharmacol. 20, 122 (1971)
  - E. coli - mutagenesis...24:31
  - Human lung culture - mutagenesis...24:31
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 20, 122 (1971)
  - Saccharomyces cerevisiae - mutagenesis...24:31
  - Salmonella typhimurium - mutagenesis...24:31
- Dalapon
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Daminozide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 073/ASM (NCI #C03827).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 073/ASM (NCI #C03827).
- D & C Green No. 5
  - Mouse - diet - 2-year...29:39
  - Rat - diet - 30-month...29:41
- D & C Orange No. 5
  - Mouse - diet - 2-year...29:31
  - Rat - diet - 30-month...29:33
  - Rat - oral - 2-year...Industrial Bio-Test Laboratories, unpub. data.
- D & C Orange No. 10
  - Rat - oral - 2-year...Industrial Bio-Test Laboratories, unpub. data.
- D & C Orange No. 17
  - Mouse - diet - 2-year...29:35
  - Rat - diet - 30-month...29:37
- D & C Red No. 2
  - Rat - oral - 2-year...Toxicology 3 (1), 115 (1975)
- D & C Red No. 6
  - Mouse - diet - 24-month...28:13
  - Rat - diet - 30-month...28:15
- D & C Red No. 7
  - Mouse - diet - 24-month...28:13
  - Rat - diet - 30-month...28:15
- D & C Red No. 8
  - Mouse - diet - 24-month...28:17
  - Rat - diet - 30-month...28:19
- D & C Red No. 9
  - Mouse - diet - 24-month...28:17
  - Mouse - diet...4:6
  - Rat - diet... 4:6
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(2), 200 (1962)
- D & C Red No. 10
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(6), 728 (1963)
- D & C Red No. 19
  - Mouse - diet - 24-month...28:21
  - Rat - diet - 30-month...28:23
- D & C Red No. 21
  - Mouse - diet - 24-month...28:25
  - Rat - diet - 30-month...28:27
  - Rat - oral - 2-year...Industrial Bio-Test Laboratories, unpub. data.
- D & C Red No. 22
  - Mouse - diet - 24-month...28:25
  - Rat - diet - 30-month...28:27
- D & C Red No. 27
  - Mouse - diet - 24-month...28:29
  - Rat - oral - 2-year...Industrial Bio-Test Laboratories, unpub. data.
  - Rat - diet - 30-month...28:19, 29:21
- D & C Red No. 28
  - Mouse - diet - 24-month...28:29
  - Rat - diet - 30-month...29:21
- D & C Red No. 30
  - Mouse - diet - 2-year...29:23
  - Rat - diet - 30-month...29:25
- D & C Red No. 33
  - Mouse - diet - 2-year...30:39
  - Rat - diet - 30-month...30:41

D & C Red No. 36
  Mouse - diet - 2-year...29:27
  Rat - diet - 30-month...29:29
D & C Red No. 37
  Mouse - diet - 24-month...28:21
  Rat - diet - 30-month...28:23
Dapsone
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-274 394/AS (NCI #C01718).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-274 394/AS (NCI #C01718).
Daunorubicin
  Pig - injection - 18-week...24:27
DBCP, see Dibromochloropropane
2,4-DB
  E. coli - mutagenesis...25:35
  Human lung culture - mutagenesis...25:35
  Saccharomyces cerevisiae - mutagenesis...25:35
  Salmonella typhimurium - mutagenesis...25:35
DCPD
  Mouse - ingestion - 3-generation...16:19
  Rat - ingestion - 10-day...16:19
  Rat - ingestion - 3-generation..16:19
DDD
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. The Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
DDE-P,P'
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 367/AS (NCI #C00555).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 367/AS (NCI #C00555).
DDM
  Mouse - diet - 2-year...6:21
  Rat - diet - 2-year...6:21
DDT
  Deer mouse - ingestion - 18-month...14:25
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 367/AS (NCI #C00464).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 367/AS (NCI #C00464).
  Rat - oral - 2-year...Chemicals in Foods. A Report to the Food and Drug Officials on Current Developments, Part II. Pesticides 16 (2), 47 (1952)
DEF
  Chicken - oral - 90-day...19:27
Dehydroacetic acid
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Delnav
  Rat - gavage - teratology...11:31
Demeton
  E. coli - mutagenesis...25:37
  Human lung culture - mutagenesis...25:37
  Saccharomyces cerevisiae - mutagenesis...25:37
  Salmonella typhimurium - mutagenesis...25:37
Denture cleansers
  Rabbit - esophageal...2:16
  Rabbit - eye...2:16
  Rabbit - skin...2:16
  Rat - esophageal...2:16
  Rat - eye...2:16
  Rat - skin...2:16
Diallate
  E. coli - mutagenesis...24:33
  Human lung culture - mutagenesis...24:33
  Rat - diet - 3-generation...15:7
  Saccharomyces cerevisiae - mutagenesis...24:33
  Salmonella typhimurium - mutagenesis...24:33
Diallyl phthalate
  Mouse - gavage - 2-year...5:21
  Rat - gavage - 2-year...5:21
2,4-Diaminoanisole
  Rat - injection - 10-week...8:17
2,5-Diaminoanisole
  Rat - injection - 10-week...8:17
2,4-Diaminoanisole sulfate
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 940/AS (NCI #C01989).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 940/AS (NCI #C01989).
  Wasp - diet - mutagenesis...33:37
3,4-Diaminobenzoic acid
  Bacteria - mutagenesis...26:5
  Cultured mouse cells - mutagenesis...26:5
3,5-Diaminobenzoic acid
  Bacteria - mutagenesis...26:5
  Cultured mouse cells - mutagenesis...26:5
1,4-Diamino-2,6-dichlorobenzene
  Mouse - diet - 2-year...5:33
  Rat - diet - 2-year...5:33
4,4'-Diaminodiphenylmethane
  Mouse - diet - 2-year...6:21
  Rat - diet - 2-year...6:21
2,4-Diaminotoluene
  Bacteria - mutagenesis...26:5
  Cultured mouse cells - mutagenesis...26:5
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 593/AS (NCI #C02302).

- Mouse - gavage - teratogenesis...33:7
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 593/AS (NCI #C02302).

2,5-Diaminotoluene sulfate
- Mouse - gavage - teratogenesis...34:5

Diarylanilide yellow
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 272/AS (NCI #C03269).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 272/AS (NCI #C03269).

Diazepam
- Rat - feed - gestation...21:19

Diazinon
- E. coli - mutagenesis...22:23
- Human lung culture - mutagenesis...22:23
- Mouse - feed - 2-year...21:39
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 889/AS (NCI #C08673).
- Rat - feed - 2-year...21:39
- Rat - oral - 2-year...Summaries of Pesticide Data. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Rat - pest control strip - 60-day...22:25
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 889/AS (NCI #C08673).
- Saccharomyces cerevisiae - mutagenesis...22:23
- Salmonella typhimurium - mutagenesis...22:23

Dibenz (a,c) anthracene
- Mouse - skin - 50-week...33:3

Dibenz (a,h) anthracene, and 12-o-tetradecanoylphortate 13-acetate
- Mouse - skin - 50-week...32:15

Dibenzo-p-dioxin
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 475/AS (NCI #C03656).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 475/AS (NCI #C03656).

Dibenzofuran
- Rat - ingestion - 2-year...10:31

Dibromochloropropane (DBCP)
- Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 472/AS (NCI #C00500).
- Mouse - gavage - 18-month...33:23
- Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 472/AS (NCI #C00500).
- Rat - gavage - 18-month...33:25

1,2-Dibromo-3-chloropropane
- Mouse - skin test - lifespan...10:13

1,2-Dibromoethane
- Mouse - gavage - 1-year...33:27
- Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 428/AS (NCI #C00522).
- Mouse - skin test - lifespan...10:3
- Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 428/AS (NCI #C00522).
- Rat - gavage - 1-year...33:29
- Rat - inhalation - 18-month...14:11, 16:23

2,3-Dibromopropyl phosphate
- Rat - gavage - 13-week...16:29

Tris(2,3-Dibromopropyl)phosphate
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 271/AS (NCI #C03270).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 271/AS (NCI #C03270).

2,6-Di-tert-butyl-4-hydroxymethylphenol
- see Ionox 100

Dibutyl sebacate
- Rat - oral - 2-year...AMA Arch. Ind. Hyg. Occup. Med. 7, 310 (1953)

Dibutyltin diacetate
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 567/AS (NCI #C02028).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 567/AS (NCI #C02028).

Dicamba
- E. coli - mutagenesis...22:21, 24:35
- Human lung culture - mutagenesis...22:21, 24:35
- Saccharomyces cerevisiae - mutagenesis...22:21, 24:33
- Salmonella typhimurium - mutagenesis...22:21, 24:35

Dichlone
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Dichlorbenil
- Rat - oral - 2-year...Food Cosmet. Toxicol. 6, 261 (1968)

2,5-Dichloro-3-aminobenzoic acid, see Amiben

ortho-Dichlorobenzene
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
ortho-Dichlorobenzene, with isobutane
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
ortho-Dichlorobenzene, with propellant 11
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
2,6-Dichlorobenzonitrile, see
  Dichlorberil
4,4'-Dichlorobiphenyl
  Mouse - gavage - gestation...31:13
1,4-Dichlorobutene
  Dog - inhalation - 90-day...13:29
  Rat - inhalation - 90-day...13:29
  Rat - inhalation - 2-year...13:29
  Rat - inhalation - teratology...13:29
2,4-Dichloro-6-o-chloroanilino-s-
  triazine, see Dyrene
2,7-Dichlorodibenzo-p-dioxin (DCDD)
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-290 570/AS
    (NCI #C03667B).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-290 570/AS
    (NCI #C03667B).
1,1-Dichloroethane
  Mouse - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-283 345/AS
    (NCI #C04535).
  Rat - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-283 345/AS
    (NCI #C04535).
1,2-Dichloroethane
  Mouse - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-285 968/AS
    (NCI #C00511).
  Mouse - skin test - lifespan...10:7
  Rat - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-285 968/AS
    (NCI #C00511).
1,1-Dichloroethylene
  Dog - ingestion - 90-day...5:9
  Mouse - gavage - 2-year...6:9
  Rat - gavage - 2-year...6:9
  Rat - ingestion - 90-day...5:9
  Rat - ingestion - long-term...5:9
  Rat - inhalation - 90-day...5:9
  Rat - inhalation - long-term...5:9
cis-1,2-Dichloroethylene
  Mouse - gavage - 2-year...6:15
  Rat - gavage - 2-year...6:15
trans-1,2-Dichloroethylene
  Mouse - gavage - 2-year...6:17
  Rat - gavage - 2-year...6:17
Dichloromethane, see Methylene chloride
2,4-Dichlorophenoxyacetic acid, see 2,4-D
2,4-Dichlorophenoxyethyl sulfate, sodium salt
  Rat - oral - 2-year...J. Agr. Food
    Chem. 11(6), 468 (1963)
3-(3,4-Dichlorophenyl)-1-methoxy-1-
  methylurea, see Linuron
1,3-Dichloropropene
  Mouse - skin test - lifespan...10:17
  Mouse - subcutaneous injection - lifespan...10:17
alpha, alpha-Dichloropropionic acid
  (sodium salt), see Dalapon
4,4-Dichloro-alpha-trichloro-methyl-
  benzhydrol, see Kelthane
Dichlorovos
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-270 937/AS
    (NCI #C00113).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-270 937/AS
    (NCI #C00113).
Dicofol
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-286 206/AS
    (NCI #C00486).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-286 206/AS
    (NCI #C00486).
Dicyandiamide
  Rat - oral - 2-year...American
    Cyanamid Co., unpub. data.
N,N'-Dicyclohexylthiourea
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-281 539/AS
    (NCI #C04524).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-281 539/AS
    (NCI #C04524).
Dicyclopentadiene
  Mouse - ingestion - 3-generation...16:19
  Rat - ingestion - 10-day...16:19
  Rat - ingestion - 3-generation..16:19
Dieldrin
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-275 666/AS
    (NCI #C00124).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-275 666/AS
    (NCI #C00124).

Rat - oral - 2-year...Toxicol. Appl.
Pharmacol. 4(2), 187 (1962)
Diepoxybutone
Wasp - diet - mutagenesis...32:31
Diesel exhaust emissions
Cat - inhalation - 1-year...16:33
Rat - inhalation - 1-year...16:33
Diesel fuel
Mouse lymphoma cells - mutagenesis...21:13
Rat - inhalation - teratogenesis...35:19
Rat bone marrow cells - mutagenesis...21:13
Salmonella typhimurium - mutagenesis...21:13
Yeast - mutagenesis...21:13
Diethanolinitrosamine
Mouse - skin - 78-week...18:17
Diethyl carbonate (3000 ppm in drinking water)
Rat - oral - 2-year...Food Cosmet.
Toxicol. 6, 449 (1968)
0,0-Diethyl 0-(3-chloro-4-methyl-1-
oxo-2H- benzopyran-7-yl) phos-
phorothioate, see Co-Ral
Diethyl-1-(2,4-dichlorophenyl)-2-
chlorovinyl phosphate
Dog - oral - 2-year...Toxicol.
Appl. Pharmacol. 17, 323 (1970)
Di(2-ethylhexyl)adipate
Mouse - diet - 2-year...6:33
Rat - diet - 2-year...6:33
Di(2-ethylhexyl)phthalate
Mouse - diet - 2-year...6:31
Rat - diet - 2-year...6:31
Rat - oral - 2-year...J. Agr. Food.
Chem. 11 (6), 468 (1963)
Diethylnitrosamine
Wasp - diet - mutagenesis...31:41
Diethylstilbestrol
Mouse - feed - 3-generation...18:13
Mouse - oral - gestation...18:35
Mouse - oral - 18-month...16:43
Mouse - subcutaneous injection - 18-month...16:43
Diethylthiourea, N,N'-
Mouse - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-288 626/AS
(NCI #C03816).
Rat - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-288 626/AS
(NCI #C03816).
Di-n-hexyl azelate
Rat - oral - 2-year...Toxicol.
Appl. Pharmacol. 4(2), 247 (1962)
2,2-Dihydroperoxy propane, with bis-
(1,1-hydro-peroxy-1,1-methyl) diethyl
peroxide in flour.
Rat - oral - 2-year...Food Cosmet.
Toxicol. 5, 309 (1967)
Dihydrosafrole
Rat - oral - 2-year...Food Cosmet.
Toxicol. 5(2), 141 (1967)
Diisobutyl adipate
Rat - oral - 2-year...J. Agr.
Food Chem. 11(6), 468 (1963)
Diisobutyl phenoxy ethoxy ethyl
dimethyl benzyl ammonium chloride,
see Hyamine 1622
Diisopropyl methylphosphonate
Rat - diet - 3-month...15:33
Rat - diet - 3-generation...15:35
Dilauryl thiodipropionic acid
Rat - oral - 2-year...Advan. Food
Res. 3, 197 (1951)
Dimethoate
Mouse - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-264 367/AS
(NCI #C00135).
Rat - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-264 367/AS
(NCI #C00135).
Dimethoxyaniline, hydrochloride 2,4-
Mouse - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-288 625/AS
(NCI #C02255).
Rat - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-288 625/AS
(NCI #C02255).
3,3'-Dimethoxybenzidine
Mouse - drinking water - 2-year...31:35
3,3'-Dimethoxybenzidine-4,4'-diisocyanate
Mouse - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-290 154/AS
(NCI #C02175).
Rat - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-290 154/AS
(NCI #C02175).
Dimethylamine
Rat - inhalation - 2-year...30:3
Dimethylbenzanthracene
Mouse - oral - gestation...18:31
7,12-Dimethylbenzanthracene
Mouse - skin - 50-week...33:5
3,3'-Dimethylbenzidine
Mouse - drinking water - 2-year...31:37
Dimethyl carbate
Rat - oral - 2-year...Insect
Repellents. Vol 19, p. 87,
Association of Food and Drug
Officials of the U.S., Topeka,
Kan. (1955)
Dimethylhydrazine
Hamster - feed - lifespan...18:29
Rat - feed - lifespan...18:27

1,1-Dimethylhydrazine
- Hamster - inhalation - 6-month...11:27
- Mouse - inhalation - 6-month...11:27
- Rat - inhalation - 6-month...11:27

2,4-Dimethyl-2-methylene-1,2,4-thiadiozolidine-5-thione
- Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)

2,4-Dimethylphenol
- Minnow - aquarium water - 28-day...31:7

Dimethyl phthalate
- Rat - oral - 2-year...Insect Repellents 19, 87. Association of Food and Drug Officials of the U.S. Topeka, Kan. (1955)

Dimethyl terephthalate
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 903/AS (NCI #C50055).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 903/AS (NCI #C50055).

3,5-Dimethyltetrahydro-1,3,5-2H-thioadiazine-2-thione, see Mylone

O,O-Dimethyl-O-(2,4,5-trichlorophenyl) phosphorothioate, see Ronnel

3,5-Dinitrobenzamide
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7, 488 (1965)

Dinitrobutylphenol
- Rat - diet - 5-month...19:35

3,5-Dinitro-o-toluamide

Dinitrotoluene
- Bacteria - mutagenesis...26:3
- Cultured mouse cells - mutagenesis...26:3
- Rat - diet - 2-year...13:9
- Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)

2,3-Dinitrotoluene
- Bacteria - mutagenesis...26:5
- Cultured mouse cells - mutagenesis...26:5

2,4-Dinitrotoluene
- Bacteria - mutagenesis...26:5
- Cultured mouse cells - mutagenesis...26:5
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 990/AS (NCI #C01865).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 990/AS (NCI #C01865).

2,6-Dinitrotoluene
- Bacteria - mutagenesis...26:5
- Cultured mouse cells - mutagenesis...26:5

3,4-Dinitrotoluene
- Bacteria - mutagenesis...26:5
- Cultured mouse cells - mutagenesis...26:5

3,5-Dinitrotoluene
- Bacteria - mutagenesis...26:5
- Cultured mouse cells - mutagenesis...26:5

1,4-Dioxane
- Mouse - water - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 711/AS (NCI #C03689).
- Rat - water - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 711/AS (NCI #C03689).

Dioxathion
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 185/AS (NCI #C00395).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 185/AS (NCI #C00395).
- Rat - oral - 2-year...Toxic. Appl. Pharm. 30(2), 275 (1974)

Diphenyl
- Rat - oral - 2-year...Food Res. 25, 328 (1960); and Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Diphenylamine
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S. Topeka, Kan. (1965); Toxicol. Appl. Pharmacol. 10, 362 (1967); and Toxicol. Appl. Pharmacol. 11, 184 (1967)

Diphenylhydantoin
- Cat - gavage - 44-day...11:33

1,1-Diphenylhydrazine hydrochloride
- Mouse - gavage - gestation...31:15

4,4'-Diphenylmethane diisocyanate
- Mouse - gavage - 2-year...5:19
- Rat - gavage - 2-year...5:19

3-(2-Diphenylyloxy)-1,2-epoxypropane
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Direct Black 38
- Mouse - diet...4:8
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54557).
- Rat - diet...4:8
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54557).

- Direct Blue 6
  - Mouse - diet...4:10
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54579).
  - Rat - diet...4:10
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54579).
- Direct Brown 95
  - Mouse - diet...4:9
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54568).
  - Rat - diet...4:9
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 204/AS (NCI #C54568).
- Disodium 4,4'-bis-((4-anilino-6-(N-methyl-2-hydroxyethylamino)-1,3,5-triazin-2-yl) amino) stilbene-2,2'-disulfonate
  - Dog - oral - 2-year...Food Cosmet. Toxicol. 13(5), 521 (1975)
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 13(5), 521 (1975)
- Disodium 4,4'-bis((4-anilino-6-morpholino-1,3,5-triazin-2-yl) amino stilbene-2,2'-disulfonate
  - Dog - oral - 2-year...Food Cosmet. Toxicol. 13 (5), 521 (1975)
- Disodium 4,4'-bis-(2-sulfostyryl) biphenyl
  - Dog - oral - 2-year...Food Cosmet. Toxicol. 13 (5), 521 (1975)
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 13 (5), 521 (1975)
- Disodium 5'-ribonucleotide, see Ribotide
- Disperse Yellow 3
  - Hamster - feed - carcinogenesis...37:39
  - Hamster - intratracheal - carcinogenesis...37:29
  - Rat - feed - carcinogenesis...37:39
  - Rat - intratracheal - carcinogenesis...37:39
- Distearyl thiodipropionic acid
  - Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)
- Disulfiram
  - Rat - ingestion - 18-month...14:11
- Disulfiram (with sodium nitrite)
  - Rat - diet - 2-year...30:25
- Disulfoton
  - E. coli - mutagenesis...25:39
  - Human lung culture - mutagenesis...25:39
  - Saccharomyces cerevisiae - mutagenesis...25:39
  - Salmonella typhimurium - mutagenesis...25:39
- 2,5-Dithiobiurea
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 534/AS (NCI #C03009).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 534/AS (NCI #C03009).
- Diuron
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
  - Rat - gavage - teratology...11:31
- DNBP
  - Human - epidemiology...43:23
  - Rat - diet - 5-month...19:35
- Docosenoic acid
  - Monkey - diet - 30-month...15:17
- Dodecyl benzene sodium sulfonate, see Santomerse No. 3
- Dodecyl gallate
  - Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org. 228 (1962)
- Dodine
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 3(1), 127 (1961); and Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Doxorubicin
  - Pig - injection - 18-week...24:29
- Drugs used in treatment of chronic disease
  - Human - epidemiology...40:11
- Dulcin
  - Rat - oral - 2-year...J. Amer. Pharm. Ass. 40, 583 (1951)
- Duprene
  - Rat - inhalation...3:4
- Dursban
  - Rat - pest control strip - 60-day...22:27
- Dyes
  - Human - workplace exposure - epidemiology...36:29
- Dyrene
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- EDTA
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-270 938/AS (NCI #C03974).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-270 938/AS (NCI #C03974).

  Rat - intravenous - 12-week...15:19
Emetine
  Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 891/AS (NCI #C01605).
  Rat - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 891/AS (NCI #C01605).
Endosulfan
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 731/AS (NCI #C00566).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 731/AS (NCI #C00566).
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Endrin
  E. coli - mutagenesis...22:19
  Hamster - gavage - gestation...31:21
  Human lung culture - mutagenesis...22:19
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 461/AS (NCI #C00157).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 461/AS (NCI #C00157).
  Rat - gavage - gestation...31:23
  Saccharomyces cerevisiae - mutagenesis...22:19
  Salmonella typhimurium - mutagenesis...22:19
Enflurane
  Rat - inhalation - 22-day...17:41
Environmental exposures (various agents)
  Human - environmental exposure - epidemiology...39:7
Environmental & occupational exposures (various agents)
  Human - environmental & occupational exposures - epidemiology...39:7, 39:11
Epichlorohydrin
  Mouse - gavage - teratogenesis...34:7
  Mouse - intramuscular injection - 3-month...28:39
  Mouse - topical - 3-month...28:39
  Rabbit - inhalation - gestation...19:11
EPN
  Chicken - oral - 90-day...19:31
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Epoxidized soybean oil, see Paraplex G-60 and G-62.
2-(3,4-Epoxycyclohexy)ethyltrimethoxysilane
  Mouse - skin - lifetime...24:3
1,2-Epoxy-3-phenoxypropane
  Rat - inhalation - 2-year...17:3
Estradiol mustard
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 787/AS (NCI #C01570).
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 787/AS (NCI #C01570).
Estrogens, synthetic
  Human - workplace exposure - epidemiology...36:41
Etchlorvynol
  Rat - gavage - 22-day...17:43
Ethanol and vinyl chloride
  Rat - drinking water, inhalation - 1-year ...9:9
Ethanolamine
  Rabbit - inhalation - 180-day...15:39
  Rat - inhalation - 180-day...15:39
Ether, butyl glycidyl
  Mouse - intramuscular injection - 3-month...28:35
  Mouse - topical - 3-month...28:35
Ethion
  E. coli - mutagenesis...24:35
  Human lung fibroblast culture - mutagenesis...23:35
  Saccharomyces cerevisiae - mutagenesis...23:35
  Salmonella typhimurium - mutagenesis...23:35
Ethionamide
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 193/AS (NCI #C01694).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 193/AS (NCI #C01694).
L-Ethionine
  Wasp - diet - mutagenesis...34:27
2-Ethoxyethanol
  Monkey - inhalation - psychomotor effects...37:3
  Rat - inhalation - teratogenesis...37:3
3-Ethoxy-4-hydroxybenzaldehyde, see ethyl vanillin
4-Ethoxyphenylurea, see Dulcin
Ethoxyquin
  Rat - gavage - teratology...11:31
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Ethoxyquine
  Drosophila melanogaster - mutagenesis...26:37
Ethyl acrylate
  Mouse - gavage - 2-year...7:37
  Mouse - inhalation - 2-year...29:3
  Rat - drinking water - 2-year...Toxicol.

    Appl. Pharmacol. 6, 29 (1964)
  Rat - gavage - 2-year...7:37
  Rat - inhalation - 2-year...29:3
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 6(1), 29 (1964)
P,P-Ethyl DDD (Perthane)
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 582/AS (NCI #C02868).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 582/AS (NCI #C02868).
Ethyl 4,4'-dichlorobenzilate
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
O-Ethyl-S,S-dipropyl phosphorodithioate
  Mouse - diet - 2-year...15:3
  Rat - diet - 2-year...15:3
Ethylene
  Rat - inhalation...3:9
2-Ethyl hexanediol-1,3
  Rat - oral - 2-year....Insect Repellents 19, 87. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1955)
2-Ethylhexyl diphenyl phosphate, see Santicizer 141
Ethyl methylphenyl glycidate
  Rat - oral - 2-year...Toxicol. Appl. Pharmaocl. 26, 58 (1973)
Ethyl phthalyl ethyl glycolate
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Ethyl vanillin
  Mouse - inhalation - long-term...5:7
  Rat - inhalation - long-term...5:7
  Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)
  Rat - inhalation - 2-year...13:3
Ethylenebisisothiocyanate sulfide
  Guinea pig - gavage - gestation...22:37
  Hamster - gavage - gestation...22:37
  Mouse - gavage - gestation...22:39
  Rat - gavage - gestation...22:39
Ethylene chlorohydrin
  Mouse - intraperitoneal - mutagenesis...30:3
  Mouse - skin - 2-year...5:23
  Rat - skin - 2-year...5:23
Ethylene dichloride
  Mouse - inhalation...5:7
  Rabbit - inhalation - 8-month...19:19
  Rat - inhalation...5:7
  Rat - inhalation - 8-month...19:9
  Rat - inhalation - 3-generation...19:7
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 18, 83 (1971)
Ethylenediamine dihydrochloride
  Rat - feed - 2-year...41:9
Ethylene glycol
  Mouse - diet - 2-year...7:41
  Rat - diet - teratology...36:9
  Rat - diet - 2-year...7:43
  Rat - diet - 3-generation...7:45
  Rat - inhalation - 2-year...7:47
  Rat - mutagenesis...36:17
Ethylene oxide
  Drosophila melanogaster - feed - mutagenesis...27:9
  Human - workplace exposure - epidemiology...36:37
  Monkey - inhalation - 18-month...25:31
  Mouse - inhalation - 2-year...7:11
  Mouse - intraperitoneal - mutagenesis...30:5
  Rat - inhalation - gestation...27:11
  Rat - inhalation - mutagenesis...27:9
  Rat - inhalation - 18-month...25:31
  Rat - inhalation - 2-year...7:11, 9:7
Ethylene thiourea
  Guinea pig - gavage - gestation...22:33
  Hamster - gavage - gestation...22:33
  Mouse - gavage - gestation...22:35
  Rat - diet - carcinogenesis...39:25
  Rat - gavage - gestation...22:35
  Rat - gavage - lifetime...11:29
  Rat - oral - 2-year...Food Cosmet. Toxicol. 13(5) 493 (1975)
Ethynerone
  Dog - intravenous - lifespan...18:3
  Monkey - intravenous - lifespan...18:3
  Monkey - oral - long term...39:23
Ethynerone and mestranol
  Monkey - oral - long term...39:23
Eugenol
  Mouse - diet - 2-year...7:23
  Rat - diet - 2-year...7:23
Fast Green FCF
  Rat - oral - 2-year...Food Cosmet. Toxicol. 4, 389 (1966)
FD & C Blue No. 1
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8(1), 29 (1966)
FD & C Blue No. 2
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8(1), 29 (1966)
FD & C Red No. 3
  Rat - diet - neurobiological effects...39:35
  Rat - diet - behavioral toxicology...39:35
FD & C Red No. 40
  Drosophila melanogaster - feed - mutagenesis...27:25
  Rat - diet - neurobiological effects...39:37
  Rat - diet - behavioral toxicology...39:37
  Wasp - diet - mutagenesis...34:29
FD & C Violet No. 1
  Dog - diet - long-term...8:15
  Mouse - oral - 80-week...Food Cosmet. Toxicol. 12 (1), 21 (1974)
  Rat - diet - 2-year...8:15
  Rat - diet - 2-generation...8:15

FD & C Yellow No. 6
  Mouse - diet...4:2
  Mouse - oral - 80-week...Food Cosmet.
    Toxicol. 12 (1), 1 (1974)
  Rat - diet...4:2
FD & C Yellow No. 10
  Mouse - diet - 2-year...30:35
  Rat - diet - 30-month...30:37
Fenaminosulf, formulated
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-287 443/AS
    (NCI #C03010).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-287 443/AS
    (NCI #C03010).
Fenfluramine
  Rat - feed - gestation..21:21
Fensulfothion
  E. coli - mutagenesis...23:37
  Human lung fibroblast culture - mutagenesis...23:37
  Saccharomyces cerevisiae - mutagenesis...23:37
  Salmonella typhimurium - mutagenesis...23:37
Fenthion
  Mouse - feed - 2-year...21:37
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-293 832/ASM
    (NCI C08651).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-293 832/ASM
    (NCI C08651).
  Rat - feed - 2-year...21:37
Ferbam
  Mouse - diet - 6-month...30:15
  Rat - oral - 2-year...Summaries of
    Pesticide Toxicity. Association of
    Food and Drug Officials of the U.S.,
    Topeka, Kan. (1965)
Ferbam (with nitrite)
  Mouse - diet - 6-month...30:15
Fibrous amphibole
  Rat - intrapleural inoculation - lifespan...12:15
  Rat - intratracheal inoculation - lifespan...12:15
Fibrous glass
  Human - workplace exposure - epidemiology...35:33
  Monkey - inhalation - 18-month...27:5
  Monkey - inhalation - 18-month...38:37
  Rat - inhalation - 18-month...27:5
  Rat - inhalation - 18-month...38:37
  Rat - inhalation...39:15
  Rat - intratracheal installation...39:15
Fibrous minerals
  Human - workplace exposure - epidemiology...40:25, 40:27
Firemaster (polybrominated biphenyl mixture)
  Rat - oral - 60-day...16:49
Firemaster FF-1 (polybrominated biphenyl mixture)
  Monkey - diet - 6-month...33:15
  Monkey - diet - 24-month...33:15
  Rat - gavage - 14-month...10:23
  Rat - gavage - 2-year...32:17
Firemaster PB-6 (polybrominated biphenyl mixture)
  Rat - diet - 12-month...30:9
Flame retardants
  Human - workplace exposure - epidemiology...40:29
Fluometuron
  Mouse - diet - 2-year...24:7
  Rat - diet - 2-year...24:7
Fly ash
  Guinea pig - inhalation - 9-month...12:7
  Hamster - inhalation - 3-month...9:15
  Hamster - inhalation - 6-month...9:15
  Hamster - inhalation - 9-month...9:15
  Hamster - inhalation - 12-month...9:15
  Hamster - inhalation - 15-month...9:15
  Monkey - inhalation - 9-month...12:7
  Mouse - inhalation - 16-week...13:21
  Rat - inhalation - 9-month...12:7
Fly ash, nickel-enriched
  Hamster - inhalation - 3-month...9:15
  Hamster - inhalation - 6-month...9:15
  Hamster - inhalation - 9-month...9:15
  Hamster - inhalation - 12-month...9:15
  Hamster - inhalation - 15-month...9:15
Folpet
  Chinese hamster lung cells - mutagenesis...21:29
  Cultured mouse cells - mutagenesis...21:29
Fonofos
  E. coli - mutagenesis...23:39
  Human lung fibroblast culture - mutagenesis...23:39
  Saccharomyces cerevisiae - mutagenesis...23:39
  Salmonella typhimurium - mutagenesis...23:39
Formaldehyde
  Mouse - inhalation - 3-month...26:11
  Mouse - inhalation - 2-year...7:17, 30:5
  Mouse - inhalation - lifetime...26:11
  Mouse - gavage - gestation...31:17
  Rat - inhalation - 3-month...26:11
  Rat - inhalation - 2-year...7:17, 30:5
  Rat - inhalation - lifetime...26:11
Formamide, dimethyl-
  DNA synthesis bioassay - mutagenesis...37:15
  Drosophila melanogaster - mutagenesis...37:15
  Mouse - inhalation - mutagenesis...37:15
  Rat - inhalation - mutagenesis...37:15
Foundry industry
  Human - workplace exposure...37:35
Freon, mixture of 113, 11, 114, and 12
  Mouse - oral - 2-year...Toxicol. Appl.
    Pharmacol. 26, 438 (1973)
  Rat - inhalation - 120-day...17:37
Fuel oil, #2
  Mouse lymphoma - mutagenesis...35:5
  Rat - inhalation - teratogenesis...35:13
  Rat bone marrow - gavage - mutagenesis...35:5
  Salmonella typhimurium - mutagenesis...35:5
Fuels, diesel, No. 2
  Human - epidemiology...43:17

  Rat - inhalation...43:11
Fur dyes
  Human - workplace exposure - epidemiology...36:29
Gasoline (See also Motor fuel, unleaded)
  Rat - inhalation - gestation...23:19
Glass, see fibrous glass
Glycerol
  Rat - oral - 2-year...AMA Arch. Ind. Hyg. Occup. Med. 7, 282 (1953)
Glycerol monostearate
  Rat - oral - 2-year...J. Amer. Oil Chem. Soc. 28, 31 (1951)
gamma-Glycidoxypropyltrimethoxysilane
  Mouse - skin - lifetime...24:5
Glycyrrhizin, ammoniated
  Mouse - feed - 8-week...27:29
Glyodin
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Gum arabic
  Mouse - diet - 8-week...28:33
  Mouse - diet - 2-year...6:25
  Rat - diet - 2-year...6:25
Gum guaiac
  Rat - oral - 2-year...Food Res. 3, 555 (1938)
Gum guar
  Mouse - diet - 2-year...6:29
  Rat - diet - 2-year...6:29
Gum rosin, pale
  Rat - oral - 2-year...Naval Stores Review and Terpene Chemicals 74 (12), 4 (1965)
Gum tara
  Mouse - diet - 2-year...6:23
  Rat - diet - 2-year...6:23
Gusathion
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 24, 405 (1973)
Guthion
  Dog - oral - 2-year...British Industrial Biological Research Association Bulletin 12(7), 359 (1973)
  Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 12(7), 359 (1973)
Hair dye ingredients
  Rat - injection - 10-weeks...8:17
Hair dyes
  Human - workplace exposure - epidemiology...36:29
  Mouse - skin - 2-year...16:13
  Mouse - skin - lifetime...5:11
  Rat - skin - lifetime...5:13
  Rat - skin - 3-generation...5:15
Halogenated hydrocarbons
  Guinea pig - ingestion - 30-day...10:29
  Hamster - ingestion - 30-day...10:29
  Rat - ingestion - 30-day...10:29
Halothane
  Rat - inhalation - 104-week...16:27
Heptachlor
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-271 967/AS (NCI #C00180).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-271 967/AS (NCI #C00180).
  Rat - gavage - teratology...11:31
Heptachlor epoxide
  Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Heptachloronorbornene
  Minnow - aquarium water - 30-day...16:41
2-Heptadecyl glyoxalidine acetate, see Glyodin
n-Heptane
  Rat - inhalation - 6-month...42:17
n-Heptyl-p-hydroxybenzoate
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8, 350 (1966)
Herban
  Rat - oral - 2-year...Hercules Inc., unpub data
2,2',4,4',5,5' Hexabromobiphenyl
  Mouse - oral - 18-month...16:43
  Mouse - subcutaneous injection - 18-month...16:43
  Rat - oral - 60-day...16:49
Hexachlorobenzene
  Cat - oral - 3-year...6:5
  Chicken - oral - 3-year...6:5
  Human - contaminated grain - epidemiology...39:13
  Monkey - oral - 2 1/2-year...17:7
  Pig - oral - 3-year...6:5
  Rat - ingestion - lifetime...16:5
  Rat - ingestion - 2-generation...16:7
Hexachlorobenzene, radiolabelled
  Chicken - gavage - 3-year...6:5
  Dog - gavage - 3-year...6:5
Hexachlorobutadiene
  Mouse - skin test - lifespan...10:19
  Rat - ingestion...1:9, 1:12
2,2',4,4',5,5' Hexachlorobiphenyl
  Mouse - oral - 18-month...16:43
  Mouse - subcutaneous injection - 18-month...16:43
2,2',4,4',6,6'-Hexachlorobiphenyl
  Mouse - gavage - teratogenesis...34:11
3,3',4,4',5,5'-Hexachlorobiphenyl
  Mouse - gavage - teratogenesis...34:9
1,2,3,4,5,6-Hexachlorocyclohexane, technical mixture and isomers, see Benzene hexachloride
Hexachlorocyclopentadiene
  DNA synthesis bioassay - mutagenesis...37:31
  Drosophila melanogaster - mutagenesis...37:31

- Minnow - aquarium water - 30-day...16:41
  - Mouse - inhalation - mutagenesis...37:31
  - Rat - inhalation - mutagenesis...37:31
- Hexachlorodibenzo-p-dioxin
  - Monkey - diet - 2-year...33:17
  - Mouse - gavage - 2-year...24:9
  - Rat - gavage - 2-year...24:9
- Hexachloroethane
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 668/AS (NCI #C04604).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 668/AS (NCI #C04604).
- Hexachloroethane combustion products, aerosol
  - Guinea pig - dermal - acute...38:3
  - Mouse - inhalation - acute...38:3
  - Mouse - inhalation - reproductive effects...38:3
  - Mouse - inhalation - teratogenesis...38:3
  - Mouse - inhalation - 90-day...38:3
  - Mouse - inhalation - 2-year...38:3
  - Mouse - dermal - acute...38:3
  - Rat - inhalation - acute...38:3
  - Rat - inhalation - reproductive effects...38:3
  - Rat - inhalation - teratogenesis...38:3
  - Rat - inhalation - 90-day...38:3
  - Rat - inhalation - 2-year...38:3
- Hexachloronorbornadiene
  - Minnow - aquarium water - 30-day...16:41
- Hexachlorophene
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-279 525/AS (NCI #C02653).
- n-(5-(3a,4,5,6,7,7a-Hexahydro-4,7-methanoindanyl))-3,3-dimethylurea, see Herban
- Hexamethylenetetramine
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 9, 491 (1971)
- Hexamethylphosphoramide
  - Rat - inhalation...3:6
- n-Hexane
  - Mouse - gavage - teratogenesis...32:19
  - Mouse lymphoma - mutagenesis...35:7
  - Rat - inhalation - teratogenesis...35:23
  - Rat bone marrow - inhalation - mutagenesis...35:7
  - Salmonella typhimurium - mutagenesis...35:7
- 1,2,6-Hexanetriol
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 13(2), 167 (1975)
- High aromatic solvent
  - Rat - inhalation - gestation...23:17
- Hyamine 1622
  - Rat - oral - 2-year...Soap Chem. Spec. 30, 147 (1954)
- Hyamine 2389
  - Rat - oral - 2-year...Soap Chem. Spec. 30, 147 (1954)
- Hycanthone
  - Wasp - diet - 2-year...34:31
- Hydraulic fluids
  - Mouse - skin - 78-week...18:17
- Hydrazine
  - Hamster - inhalation - 12-month...11:25
  - Mouse - inhalation - 12-month...11:25
  - Rat - inhalation - 12-month...11:25
- Hydrazobenzene
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 791/AS (NCI #C01854).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 791/AS (NCI #C01854).
- Hydrogen fluoride
  - Guinea pig - inhalation - 4-month...10:41
- Hydroquinone
  - Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)
- Hydroxyalkane (C14-C18) sulfonate
  - Rat - oral - 2-year...Toxicology 5 (3), 359 (1976)
- Hydroxycitronellal, see Piperonal
- 14-Hydroxydaunorubicine, with cysteamine
  - Rat - intravenous injection...4:11
- Hydroxyethyl acrylate
  - Rat - inhalation - 18-month...15:11
- Hydroxyethylcellulose
  - Rat - oral - 2-year...J. Amer. Pharm. Ass. 36, 335 (1947)
- 4-Hydroxy-3-methoxybenzaldehyde, see Vanillin
- Hydroxypropyl distarch glycerol
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 12(5/6), 651 (1974)
- Hydroxypropyl methylcellulose
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
- Hydroxyurea
  - Cat - gavage - 44-day...11:33
- ICRF-159
  - Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 853/AS (NCI #C01627).
  - Rat - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 853/AS (NCI #C01627).
- Indalone
  - Rat - oral - 2-year...Insect Repellents 19, 87. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1955)
- Indigo carmine

- Rat - oral - 2-year...Food Cosmet. Toxicol. 13(2), 167 (1975)

Indium
- Mouse - intraperitoneal injection - lifetime...12:37

Indomethacin
- Rat - oral - 2-day...24:19

Industrial emissions
- Human - environmental exposure - epidemiology...39:3, 39:9, 39:21

Iodoform
- Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 344/AS (NCI #C04568).
- Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 344/AS (NCI #C04568).

Ionizing radiation
- Dog - whole body - lifetime...36:3

Ionox 100
- Rat - oral - 2-year...British Industrial Biological Research Bulletin 10(5), 245 (1971)

IPD
- Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 455/AS (NCI #C01547).
- Rat - intraperitioneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 455/AS (NCI #C01547).

Iron
- Mouse - intraperitoneal injection - lifetime...12:39

Iron foundry casting operations
- Human - workplace exposure - epidemiology...38:33

Irradiation
- Human - epidemiology...42:7

d-Isoascorbic acid
- Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951).

d-Isoascorbyl palmitate
- Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)

Isobutane, with ortho-Dichlorobenzene
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isobutane, with Isopropanol
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isobutane, with Methyl ethyl ketone
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isobutane, with Naphthas
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isobutane, with Perchloroethylene
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isobutane, with Toluene
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isobutane, with 1,1,1-trichloroethane
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isobutane, with trichloroethylene
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isophosphamide
- Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-275 677/AS (NCI #C01638).
- Rat - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-275 677/AS (NCI #C01638).

Isopropanol
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isopropanol, with isobutane
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isopropanol, with propellant 11
- Dog - inhalation...3:3
- Mouse - inhalation...3:3
- Rat - inhalation...3:3

Isopropyl N-(3-chlorophenyl) carbamate, see CIPC

4,4'-Isopropylidenebis-(2-isopropylphenol)
- Rat - oral - 2-year...J. Agr. Food Chem. 11 (6), 468 (1963)

Isosafrole, see Dihydrosafrole

Jet engine noise
- Mouse - whole body - teratogenesis...32:21

Jet engine noise (with Sonalert and alarm bells)
- Mouse - whole body - teratogenesis...32:23

Jet fuel, commercial
- Mouse lymphoma - mutagenesis...35:9
- Rat bone marrow - inhalation - mutagenesis...35:9
- Salmonella typhimurium - mutagenesis...35:9

Jet fuel, commercial, A
- Rat - inhalation - teratogenesis...35:11

Kelthane
- Rat - oral - 2-year...Summaries of

    Pesticide Toxicity. Association of
    Food and Drug Officials of the U.S.,
    Topeka, Kan. (1965)
Kepone
  Hamster - intravenous - 160-day...31:25
  Mouse - oral - 18-month...16:43
  Mouse - subcutaneous injection - 18-month...16:43
  Rat - ingestion - 49-day...14-29
  Rat - ingestion - 3-month...14-5
  Rat - intravenous - 160-day...31:27
Kerosene
  Rat - inhalation - teratogenesis...35:21
Krypton-85
  Guinea pig - whole body immersion - 40-day...13:33
  Rat - whole body immersion - 40-day...13:33
Lanthanum
  Mouse - intraperitoneal injection - lifetime...12:37
LAS, see Alkylbenzenesulfonate
Lasiocarpine
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-278 641/AS
    (NCI #C01478).
Laundry bleaches
  Rabbit - esophageal...2:16
  Rabbit - eye...2:16
  Rabbit - skin...2:16
  Rat - esophageal...2:16
  Rat - eye...2:16
  Rat - skin...2:16
Lead
  Mouse - dam's milk - 21-day...14:31
  Mouse - ingestion - 90-day...14:31
Lead and compounds
  Human - workplace exposure - epidemiology...38:27
Lead acetate
  Monkey - ingestion - 4-year...14:33
  Monkey - in utero/dam's milk - 5-month...14:33
  Rat - diet - 12-week...15:19
  Rat - drinking water - 3-month...17:21
  Rat - drinking water - 150-day...13:19
  Rat - drinking water - 7-month...13:37
  Rat - drinking water - 1-year...16:47
  Rat - ingestion - 120-day...10:27
  Rat - in utero/dam's milk/ingestion - 200-day...14:27
Lead carbonate
  Rat - dam's milk - 21-day...14:23
  Rat - ingestion - 50-day...14:23
Lead chloride
  Rat - drinking water - 90-day...11:15
Lead monoxide
  Hamster - intratracheal instillation
    - 16-week...15:25
Leather industry
  Human - workplace exposure - epidemiology...36:23
Leptophos
  Cat - oral - 60-day...12:17
  Chicken - oral - 90-day...19:29
Lidoflazine
  Dog - oral - 4-year...Toxicol. Appl.
    Pharmacol. 33(2), 376 (1975)
Light Green S F Yellowish
  Rat - oral - 2-year...Food Cosmet.
    Toxicol. 4, 389 (1966)
Lindane
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-273 480/AS
    (NCI #C00204).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-273 480/AS
    (NCI #C00204).
  Rat - gavage - teratology...11:31
  Rat - oral - 2-year...Chemicals in Foods:
    A Report to the Association of Food and
    Drug Officials of the U.S. on Current
    Developments, Part II. Pesticides. (2),
    47 (1952)
Linuron
  Rat - oral - 2-year...Food Cosmet.
    Toxicol. 6, 171 (1968)
  Rat - gavage - teratology...11:31
Lithocholic acid
  Mouse - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-288 476/AS
    (NCI #C03861).
  Rat - gavage - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-288 476/AS
    (NCI #C03861).
Locust bean gum
  Mouse - diet - 2-year...6:27
  Rat - diet - 2-year...6:27
  Rat - ingestion - 2-year...11:3
  Rat - ingestion - 3-generation...11:5
Lubricating oils, naphthenic base
  Mouse - skin - 2-year...43:5
Lubricating oils, paraffinic base
  Mouse - diet - 2-year...43:3
  Mouse - skin - 2-year...43:5
Lysinoalanine
  Non-human primates - feed - 42 days...9:37
  Rat - ingestion - 6-week...11:35
  Rat - feed - 42 days...9:37
Magnesium
  Mouse - intraperitoneal injection - lifetime...12:37
Malaoxon
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-299 858/AS
    (NCI #C08628).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-299 858/AS
    (NCI #C08628).
Malathion
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-278 527/AS
    (NCI #C00215).

Rat - diet - 2-year...24:13
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 527/AS (NCI #C00215).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-300 301/AS (NCI #C00215B).
Rat - gavage - teratology...11:31
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Rat - feed - 2-year...26:7
Maleic anhydride
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Maneb
Mouse - gastric intubation - teratology...12:21
Rat - gastric intubation - teratology...12:21
Rat - gastric intubation - to motor impairment...12:23
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Manganese
Manganese and manganese compounds
Human - workplace exposure - epidemiology...38:39
Mouse - dam's milk - 21-day...14-31
Mouse - gavage - 5-week...23:7
Mouse - ingestion - 90-day...14-31
Mouse - intraperitoneal injection - lifetime...12:37
Rat - diet - lifetime...19:41
Rat - intramuscular injection - 12-month...23:7
Manganese dioxide
Mouse - gavage - 5-week...23:9
Rat - intramuscular injection - 12-month...23:9
Manganese oxide
Mouse - gavage - 5-week...23:11
Rat - diet - lifetime...13:35
Rat - feed - 8-month...26:15
Rat - feed - 2-generation...21:33
Rat - intramuscular injection - 12-month...23:11
Mannitol
Mouse - diet - 2-year...7:25
Rat - diet - 2-year...7:25
Melamine
Mouse - diet - 2-year...5:29
Rat - diet - 2-year...5:29
Melamine-formaldehyde resin, see Parez 607
D1-Menthol
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 761/AS (NCI #C50000).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 761/AS (NCI #C50000).
Mercaptobenzothiazole
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Mercury acetate
Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides. 16(2), 47 (1952)
Merphos
Chicken - oral - 90-day...19:25
Mestranol
Dog - intravenous - lifespan...18:3
Monkey - intravenous - lifespan...18:3
Monkey - oral - long term...39:23
Metaldehyde
Rat - oral - 2-year...Toxicology 4(1), 97 (1975)
Methapyrilene
Mouse - diet - 2-year...30:19
Rat - diet - 2-year...30:19
Methoxychlor
E. coli - mutagenesis..23:41
Human lung fibroblast culture - mutagenesis...23:41
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 271/AS (NCI #C00497).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 271/AS (NCI #C00497).
Rat - gavage - teratology...11:31
Rat - gavage - 70-day...15:23
Rat - oral - 2-year...J. Pharmacol. Exp. Thera. 104, 60 (1952); and Chemicals in Foods: A Report to the Association of Food and Drug Officials, Part II. Pesticides 16 (2), 47 (1952)
Saccharomyces cerevisiae - mutagenesis...23:39
Salmonella typhimurium - mutagenesis...23:41
2-Methoxyethanol
DNA synthesis bioassay - mutagenesis...37:19
Drosophila melanogaster - mutagenesis...37:19
Mouse - inhalation - mutagenesis...37:19
Rat - inhalation - mutagenesis...37:19
Methyl acrylate
Rat - inhalation - 2-year...32:7
Methylatropine nitrate
Rat - slow release tablet - gestation...24:25
7-Methylbenzanthracene
Mouse - skin - 50-week...34:41

Methylbenzimidazole
  Rat - ingestion - 2-year...10:31
Methyl bromide
  DNA synthesis bioassay - mutagenesis...37:13
  Drosophila melanogaster - mutagenesis...37:13
  Mouse - inhalation - mutagenesis...37:13
  Rabbit - inhalation - gestation...27:11
  Rabbit - inhalation - teratogenesis...37:7
  Rat - inhalation - 6-month...26:19
  Rat - inhalation - 12-month...26:33
  Rat - inhalation - mutagenesis...37:13
  Rat - inhalation - teratogenesis...37:5
Methyl-n-butyl ketone
  Rat - inhalation - 22-day...17:39
  Rat - inhalation - 5-month...17:15
Methyl chloride
  Human - workplace exposure...36:33
  Mouse - inhalation - 3-month...26:13
  Mouse - inhalation - 2-year...30:7
  Mouse - inhalation - lifetime...26:13
  Rat - inhalation - 3-month...26:13
  Rat - inhalation - 2-year...30:7
  Rat - inhalation - lifetime...26:13
Methyl chloride with caffeine
  Human - inhalation...26:31
Methylcyclopentadienyl manganese tricarbonyl
  Mouse - ingestion - 8-week...12:29
  Mouse - inhalation - 90-day...15:5
  Monkey - inhalation - 90-day...15:5
  Monkey - intravenous - 6-month...16:21
  Monkey - intraperitoneal injection - 3-month...28:9
  Rat - ingestion - teratology...12:31
  Rat - inhalation - 90-day...15:5
  Rat - intraperitoneal injection - 3-month...28:9
  Rat - intravenous - 6-month...16:21
6-Methyl-2H-1-benzopyran-2-one, see 6-Methylcoumarin
Methylcellulose
  Rat - oral - 2-year...Food Cosmet. Toxicol. 11, 943 (1973)
6-Methylcoumarin
  Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)
o-Methyl-o-(1,4-dichlorophenyl)-isopropyl phosphoroamidethioate
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
N-Methyl dicyclohexylamine
  DNA synthesis bioassay - mutagenesis...37:29
  Drosophila melanogaster - mutagenesis...37:29
  Mouse - inhalation - mutagenesis...37:29
  Rat - inhalation - mutagenesis...37:29
4-4'-Methylenebis-2-chloroaniline
  Dog - gelatin capsules...2:5
4,4'-Methylenebis(N,N-Dimethyl)Benzenami
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 856/AS (NCI #C01990).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 856/AS (NCI #C01990).
Methylene chloride
  Drosophila melanogaster - mutagenesis...25:23
  Hamster - inhalation...1:2
  Human - workplace exposure...36:33
  Mouse - gavage - 2-year...6:7
  Mouse - inhalation - 2-year...7:21
  Rat - gavage - 2-year...6:7
  Rat - inhalation...1:2
  Rat - inhalation - 2-year...7:21
4,4'-Methylenedianiline
  Mouse - diet - 2-year...6:21
  Rat - diet - 2-year...6:21
1,2-Methylenedioxy-4-allylbenzene, see Dihydrosafrole
1,2-Methylenedioxy-4-propylbenzene, see Dihydrosafrole
4,4'(1-Methyl-1,2-ethanediyl)bis-2,6 piperazinedione
  Dog - intravenous -78 day...7:49
Methylethylcellulose
  Rat - oral - 2-year...Food Cosmet. Toxicol. 6, 449 (1968)
Methyl ethyl ketone
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Methyl ethyl ketone, with isobutane
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation... 3:3
Methyl ethyl ketone, with propellant 11
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation... 3:3
Methylglyoxal
  Rat - oral - 22-day...17:45
Methyl heptine carbonate
  Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8, 265 (1969)
Methyl p-hydroxybenzoate
  Rat - oral - 2-year...J. Amer. Pharm. Ass. 45, 260 (1956)
Methylmercury chloride
  Monkey - in utero/dam's milk - 170-day...14:17
  Rat - drinking water - 6-month...17:11
Methyl methacrylate
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 6(1), 29 (1964)
  Mouse - inhalation - 2-year...7:7
  Rat - inhalation - 2-year...7:7
Methyl methanesulfonate
  Wasp - diet - mutagenesis...33:35
Methyl naphthalene acetic acid
  Rat - oral - 2-year...Chemicals in Foods:

A Report to the Association of Food and Drug Officials, Part II. Pesticides 16 (2), 47 (1952)

2-Methyl-1-nitroanthraquinone
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 439/AS (NCI #C01923).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 439/AS (NCI #C01923).

Methyl parathion
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 891/AS (NCI #C02971).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 891/AS (NCI #C02971).

Methylpolysiloxane
- Drosophila melanogaster - mutagenesis...26:41
- Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)

N-Methyl-2-pyrrolidene
- Rat - inhalation - 2-year...17:5

Methyl salicylate
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(5), 576 (1963)
- Rat - diet - behavioral teratology...40:7
- Rat - diet - neurobiological effects...40:7

5-Methyl-tetrahydrohomofolic acid
- Dog - intravenous - 46-day...14:7
- Dog - intravenous - 50-day...14:7
- Dog - intravenous - 55-day...14:7
- Dog - intravenous - 78-day...14:7
- Monkey - intravenous - 50-day...14:7

Metronidazole
- Wasp - diet - mutagenesis...34:35

Mexacarbate
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 471/AS (NCI #C00544).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 471/AS (NCI #C00544).

Michler's Ketone
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 855/AS (NCI #C02006).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 855/AS (NCI #C02006).

Microwave radiation
- Human - workplace exposure - epidemiology...36:39
- Monkey - head - 1-year...21:41
- Monkey - whole body - 16-month...13:23
- Mouse - whole body - gestation...20:29, 20:41
- Mouse - whole body - teratogenesis...33:9
- Mouse - whole body - 3-week...20:37
- Rat - whole body - 3-week...19:39
- Rat - whole body - 3-month...20:15 20:17, 20:19, 20:21
- Rat - whole body - gestation...20:23, 20:25, 29:11
- Rat - whole body - organogenesis...22:41
- Rat - whole body - perinatally...20:39
- Rat - whole body - 16-week...20:27

Minoxidil
- Beagle dog - diet - 1-month...25:29

Mirex
- Deer mouse - ingestion - 18-month...14:25
- Goat - ingestion - 18-week...10:21
- Goat - ingestion - 22-week...10:21
- Goat - ingestion - 61-week...10:21
- Goat - ingestion - 65-week...10:21
- Mouse - diet - 2-year...30:21
- Mouse - gastric intubation - teratology...12:19
- Mouse - oral - 18-month...16:43
- Mouse - subcutaneous injection - 18-month...16:43
- Rat - diet - 2-year...30:21
- Rat - gastric intubation - teratology...12:19
- Rat - ingestion - 49-day...14:29

Mitomycin-C
- Wasp - diet - mutagenesis...32:33

MM 0
- Rat - feeding - 160-day...12:27

MMT
- Monkey - intravenous - 6-month...16:21
- Rat - intravenous - 6-month...16:21

Molybdenum
- Mouse - intraperitoneal injection - lifetime...12:37

Monochloroacetaldehyde 2,4-dinitrophenylhydrazone, see Olin 1763

Monochlorobenzene
- Human - workplace exposure...36:33
- Rabbit - inhalation - 24-week...15:37
- Rat - inhalation - 24-week...15:37

Monopotassium glutamate
- Drosophila melanogaster - feed - mutagenesis...27:27

Monosodium glutamate
- Rat - diet...8:5
- Rat - diet - behavioral teratology...39:27
- Rat - diet - neurobehavioral effects...39:27

Monuron
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Monuron (with sodium nitrite)
- Rat - diet - 2-year...30:27

Motor fuel, unleaded
- Mouse - inhalation - 2-year...21:3
- Rabbit - inhalation - 6-week...25:3
- Rat - inhalation - 2-year...21:3

- Rat - inhalation - 6-week...25:3
- Motor oil
  - Mouse - skin - 2-year...43:7
- Motor oils, API Composite
  - Mouse lymphoma - mutagenesis...35:3
  - Rat bone marrow - gavage - mutagenesis...35:3
  - Salmonella typhimurium - mutagenesis...35:3
- Mycotoxins
  - Mouse - ingestion - 3-month...14:3
  - Mouse - intraperitoneal - 3-month...14:3
  - Poultry - ingestion - 3-month...14:3
  - Poultry - intraperitoneal - 3-month...14:3
- Mylone
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 9, 521 (1966)
- Mylone 45
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3), 315 (1959)
- Myrj 45
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3), 315 (1959)
- Myrj 52
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3), 315 (1959)
- Naled
  - Rat - gavage - teratology...11:31
- N-(1-naphthyl)ethylenediamine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-289 733/AS (NCI #C03281).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-289 733/AS (NCI #C03281).
- 1,5-Naphthalenediamine
- Naphtha, varnish makers and painters
  - Rat - teratogenesis...35:25
- Naphthas
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Naphthas, with isobutane
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Naphthas, with propellant 11
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- beta-Naphthylamine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 646/AS (NCI #C03021).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 646/AS (NCI #C03021).
  - Wasp - diet - mutagenesis...34:37
- 1-Naphthyl-N-methyl carbamate
  - Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
- alpha-Naphthylthiourea, see ANTU
- Neoprene
  - Rat - inhalation...3:4
- Nickel
  - Mouse - gavage - 5-week...23:13
  - Mouse - intraperitoneal injection - lifetime...12:37
  - Rat - intramuscular injection - 12-month...23:13
- Nickel oxide
  - Mouse - gavage - 5-week...23:15
  - Rat - intramuscular injection - 12-month...23:15
- Nicotine
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Nithiazide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 897/AS (NCI #C03792).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-295 897/AS (NCI #C03792).
- Nitrilotriacetic acid
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 177/AS (NCI #C02766).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 177/AS (NCI #C02766).
- 5-Nitroacenaphthene
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 347/AS (NCI #C01967).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 347/AS (NCI #C01967).
- 3'-Nitro-p-Acetophenetide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 857/AS (NCI #C01978).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 857/AS (NCI #C01978).
- Methylmercury
  - Human - prenatal exposure - epidemiology...41:15
  - Human - early postnatal exposure - epidemiology...41:15
- 5-Nitro-o-anisidine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 411/AS (NCI #C01934).

  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 411/AS (NCI #C01934).
4-Nitroanthranilic acid
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 942/AS (NCI #C01945).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 942/AS (NCI #C01945).
6-Nitrobenzimidazole
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 834/AS (NCI C01912).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 834/AS (NCI C01912).
Nitrofen
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 440/AS (NCI #C00420).
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-296 038/AS (NCI #C00420).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 440/AS (NCI #C00420).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-296 038/AS (NCI #C00420).
Nitrogen dioxide
  Baboon - inhalation - 6-month...12:39
  Guinea pig - inhalation - 6-month...12:39
  Monkey - inhalation - 1-year...12:39
  Monkey - inhalation - 11-year...14-35
  Mouse - inhalation - 3-month...13:17
  Mouse - inhalation - 4-month...12:13
  Mouse - inhalation - 1 1/2-year...14:13
  Rat - inhalation - 30-day...12:11
  Rat - inhalation - 1-year...12:9
  Rat - inhalation - 2 1/2-year...14:21
Nitrogen dioxide, and high/low salt diets
  Rat...39:17
Nitrogen oxides
  Rat - inhalation - 90-day...10:33
Nitroglycerin
  Human - cardiovascular - epidemiology...43:21
Nitromethane
  Rabbit - inhalation - 6-month...16:25
  Rat - inhalation - 6-month...16:25
1-Nitronaphthalene
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 310/AS (NCI #C01956).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 310/AS (NCI #C01956).
2-Nitro-p-phenylenediamine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 304/AS (NCI #C02222).
  Mouse - gavage - teratogenesis...34:13
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 304/AS (NCI #C02222).
  Rat - injection - 10-week...8:17
4-Nitro-o-phenylenediamine
  Mouse - gavage - teratogenesis...34:19
  Rat - i.p. injection - 10-week...25:27
  Wasp - diet - mutagenesis...34:21
1-Nitropropane
  Rat - inhalation - 18-month...26:21
  Rat - inhalation - 2-year...41:7
2-Nitropropane
  DNA synthesis bioassay - mutagenesis...37:23
  Drosophila melanogaster - mutagenesis...37:23
  Mouse - inhalation - mutagenesis...37:23
  Rabbit - inhalation - 6-month...16:25
  Rat - inhalation - 6-month...16:25
  Rat - inhalation - 18-month...26:23
  Rat - inhalation - 2-year...41:7
  Rat - inhalation - mutagenesis...37:23
3-Nitropropionic acid
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 102/AS (NCI #C03076).
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 102/AS (NCI #C03076).
Nitrosamines
  Human - workplace exposure - epidemiology...36:13
N-Nitrosodiethanolamine
  Rat - gavage - 8-week...27:7
p-Nitrosodiphenylamine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 500/AS (NCI #C02244).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 500/AS (NCI #C02244).
Nitrosopyrrolidine

- Mouse - ingestion - 18-month...16:9
- Rat - ingestion - lifetime...16:11

- 4-Nitrotoluene
  - Bacteria - mutagenesis...26:5
  - Cultured mouse cells - mutagenesis...26:5
- 5-Nitro-o-toluidine
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 872/AS (NCI #C01843).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 872/AS (NCI #C01843).
- Nitrous oxide
  - Drosophila melanogaster - feed - mutagenesis...27:13
  - Rabbit - inhalation - gestation...27:15
  - Rat - inhalation - 104-week...16:27
  - Rat - inhalation - gestation...27:15
  - Rat - inhalation - mutagenesis...27:13
- gamma-Nonalactone
  - Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8, 265 (1969)
- Nonferrous smelter emissions
  - Human - environmental exposure - epidemiology...39:5
  - Human - workplace exposure - epidemiology...39:5
- Nonferrous smelter emissions, and smoking
  - Human - environmental exposure - epidemiology...39:5
  - Human - workplace exposure - epidemiology...39:5
- Nonyl phenoxy polyethylene (9) glycol ether, see Tergitol nonionic TP-9
- Nordihydroguaiaretic acid
  - Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)
- Nuclear radiation
  - Shipyard workplace exposure - epidemiology...35:29
- Nylon
  - Rat - oral - 2-year...DuPont Co., Haskell Laboratories, unpub. data
- Occupational exposures (various agents)
  - Human - occupational exposure - epidemiology...39:7, 39:11
- Occupational hazards
  - Human - reproduction - epidemiology...43:19
- Ochratoxins
  - Mouse - ingestion - 3-month...14:3
  - Mouse - intraperitoneal - 3-month...14:3
  - Poultry - ingestion - 3-month...14:3
  - Poultry - intraperitoneal - 3-month...14:3
- Ochratoxin A
  - Pig - diet - 4-week...9:31
  - Pig - diet - 4-month...9:31
  - Pig - diet - 2-year...9:31
- Octadecylamine
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(5), 610 (1962)
- Octyl gallate
  - Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org. 228 (1962)
- p-tert-Octylphenoxy-polyethoxyethanols, see Triton X-405
- Oil shale
  - Monkey - inhalation - 26-week...20:3
  - Monkey - skin application - 18-month...20:5
  - Rat - inhalation - 26-week...20:3
- Oil shale dusts
  - Rat - gavage - 3-week...27:39
- Oil shale, raw and processed
  - Cultured mammalian cells - mutagenesis...21:7
  - Cultured rat cells - mutagenesis...21:7
  - Rat - inhalation - gestation...21:9
  - Salmonella typhimurium - mutagenesis...21:7
  - Yeast - mutagenesis...21:7
- alpha-Olefin (C14-C18) sulfonate
  - Rat - oral - 2-year...Toxicology 5 (3), 359 (1976)
- Olin 1763
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8, 472 (1966)
- Oral contraceptive steroids
  - Monkey - oral - long term...39:23
- Orange G
  - Mouse - diet...4:5
  - Rat - diet...4:5
- Organochlorine compounds
  - Minnow - aquarium water - 30-day...16:41
- Organophosphorous compounds
  - Human - workplace exposure - epidemiology...35:27
- 4,4-Oxydianiline
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- 4,4'-Oxydianiline
  - Rat - diet...2:2
  - Rat - diet - 2-year...25:11
- Ozone
  - Guinea pig - inhalation - 6-month...13:13
  - Human - inhalation - 3-year...13:25
  - Monkey - inhalation - 1-year...12:9
  - Monkey - inhalation - 11-year...14:35
  - Mouse - inhalation - 3-month...13:17
  - Mouse - inhalation - 4-month...12:13
  - Mouse - inhalation - 6-month...13:13
  - Rat - inhalation - 90-day...10:33
  - Rat - inhalation - 1-year...12:9
  - Rat - inhalation - 1 1/2-year...14:21
- Ozone, and high/low salt diets
  - Rat...39:17
- P-4000
  - Rat - oral - 2-year...J. Amer. Pharm. Ass. 40, 583 (1951)
- Painting industry (excluding paint manufacture)
  - Human - workplace exposure - epidemiology...36:27
- PALA
  - Dog - intravenous - 1-year...16:17
  - Monkey - intravenous - 1-year...16:17
  - Mouse - oral - 30-day...16:17

- Paraplex G-60 and Paraplex G-62
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 2(6), 649 (1960)
- Parathion
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 803/AS (NCI #C00226).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 803/AS (NCI #C00226).
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Parez 607
  - Rat - oral - 2-year...American Cyanamid Co., unpub. data
- Particulate matter
  - Mouse - inhalation - 3-month...13:17
- Patulin
  - Rat - gavage - 30-month...9:35
- PCNU
  - Dog - intravenous - 55-day...8:27
- Penicillic acid
  - Dog - intravenous - 8-day...8:27
  - Dog - intravenous - 78-day...8:27
  - Rat - diet - 2-generation...9:29
- Pentachlorobenzene
  - Rat - diet - 100-day...19:37
- Pentachloroethane
  - Mouse - gavage - 2-year... 6:13
  - Rat - gavage - 2-year... 6:13
- Pentachloronitrobenzene
  - Dog - oral - 2-year...Toxicol. Appl. Pharmacol. 18, 522 (1971)
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 732/AS (NCI #C00419).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 732/AS (NCI #C00419).
- Pentachlorophenol
  - Cow - diet - 8-week...15:15
  - Cow - diet - 4-month...22:9
  - Guinea pig - diet - 64-day...15:13
  - Minnow - aquarium water - 28-day...32:9
- Pentamethylmelamine, monohydrochloride
  - Dog - intravenous - 1-year...16:15
  - Monkey - intravenous - 1-year...16:15
  - Mouse - oral - 30-day...16:15
- Perchloroethylene, see also Tetrachloroethylene
- Perchloroethylene
  - Dog - inhalation...3:3
  - Hamster - inhalation - 2-year...7:19
  - Human - dry cleaning workplace exposure - epidemiology...35:39
  - Mouse - gavage - 2-year...8:51
  - Mouse - inhalation...3:3
  - Mouse - inhalation - 2-year...7:19
  - Mouse - skin test - lifespan...10:11
  - Rabbit - inhalation - teratology...19:15
  - Rat - exposure to vapor - 1-year...2:6
  - Rat - gavage - 2-year...8:51, 29:19
  - Rat - inhalation...3:3
  - Rat - inhalation - 7-day...14:9
  - Rat - inhalation - 1-year...15:9
  - Rat - inhalation - 2-year...7:19
  - Rat - inhalation - teratology...19:15
- Perchloroethylene, with isobutane
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Perchloroethylene, propellant 11
  - Dog - inhalation...3:3
  - Mouse - inhalation...3:3
  - Rat - inhalation...3:3
- Peroxyacetyl nitrate
  - Guinea pig - inhalation - 6-month...13:13
  - Mouse - inhalation - 6-month...13:13
- Perthane
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Pesticides
  - Human - workplace exposure - epidemiology...36:11
- Petrolatum
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7(3), 382 (1965)
- Petroleum, crude oil fractions
  - Salmonella typhimurium - mutagenesis...35:15, 35:17
- Petroleum distillates
  - Rat - intratracheal injection...2:15
  - Rat - intravenous injection...2:15
- Petroleum products, diesel oil
  - Human - epidemiology...43:17
  - Rat - inhalation...43:11
- Petroleum waxes No. 2, 8, 12, 15, and 20
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4, Supp., 49 (1962)
- Phenacetin
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7, 503 (1965)
- Phenazopyridine hydrochloride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 207/AS (NCI #C01672).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 207/AS (NCI #C01672).
- Phencyclidine
  - Mouse - gavage - teratogenesis...34:15
- Phenesterin
  - Mouse - gavage - carcinogenesis...National

Cancer Institute Bioassay Report available from NTIS, order number PB-283 361/AS (NCI #C01558).
- Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 361/AS (NCI #C01558).

Phenformin
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 176/AS (NCI #C01741).
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-266 176/AS (NCI #C01741).

Phenol
- Minnow - aquarium water - 28-day...31:9
- Mouse - drinking water - 2-year...32:41
- Rat - drinking water - 2-year...32:41
- Rat - oral - 2-year...Advan. Food Res. 3, 197 (1951)

Phenol, 5%
- Rabbit - instilled in eye...2:18

Phenoxybenzamine hydrochloride
- Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 095/AS (NCI #C01661)
- Rat - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 095/AS (NCI #C01661)

Phenyldimethylurea
- Rat - oral - 2-year...Allied Chemical Corp., unpub. data

1-Phenyl-3-methyl-5-pyrazolone
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 122/AS (NCI #C03952).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 122/AS (NCI #C03952).

o-Phenylenediamine
- Wasp - diet - mutagenesis...33:39
- Wasp - diet - mutagenesis...34:23

o-Phenylenediamine, 4-chloro-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 362/AS (NCI #C03292).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-283 362/AS (NCI #C03292).

o-Phenylenediamine, 4-nitro
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 306/AS (NCI #C03941).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 306/AS (NCI #C03941).

m-Phenylenediamine
- Rat - injection - 10-week...8:17
- Wasp - diet - 2-year...34:33

m-Phenylaminediamine,4-chloro-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 201/AS (NCI #C03305).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 201/AS (NCI #C03305).

p-Phenylenediamine dihydrochloride
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 124/AS (NCI #C03930).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-290 124/AS (NCI #C03930).

p-Phenylenediamine,N-phenyl-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 856/AS (NCI #C02233).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 856/AS (NCI #C02233).

p-Phenylenediamine sulphate, 2-chloro-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 370/AS (NCI #C03316).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 370/AS (NCI #C03316).

Phenyl mercuric acetate
- Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)

o-Phenylphenol
- Rat - oral - 2-year...J. Pharm. 104, 202 (1952)

Phosalone
- Rat - gavage - teratology...11:31

Phosdrin
- Rat - gavage - teratology...11:31

- Phosphamidon
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 800/AS (NCI #C00588).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 800/AS (NCI #C00588).
- Phosphate fertilizers
  - Human - workplace exposure - epidemiology...36:21
- Phosphated distarch phosphate
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 12(5/6), 651 (1974)
- Phosphatidic acids and triglycerides
  - Rat - oral - 2-year...Food Cosmet. Toxicol. 11, 755 (1973)
- Photodieldrin
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-274 393/AS (NCI #C00599).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-274 393/AS (NCI #C00599).
- Phthalamide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 831/AS (NCI #C03612).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 831/AS (NCI #C03612).
- Phthalic anhydride
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 594/AS (NCI #C03601).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 594/AS (NCI #C03601).
- Picloram
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-276 471/AS (NCI #C00237).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-276 471/AS (NCI #C00237).
- Pimaricin
  - Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8(1), 97 (1966)
- Piperazine dihydrochloride
  - Drosophila melanogaster - mutagenesis...26:35
- Piperine (with sodium nitrite)
  - Rat - diet - 2-year...30:29
- Piperonal
  - Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8, 265 (1969)
- Piperonyl butoxide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 753/AS (NCI #C002813).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 753/AS (NCI #C002813).
  - Rat - gavage - teratology...11:31
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Piperonyl sulfoxide
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 788/AS (NCI #C02824).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 788/AS (NCI #C02824).
- Pivalolactone
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 645/AS (NCI #C04126).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 645/AS (NCI #C04126).
- Platinum dioxide
  - Hamster - intratracheal instillation - 16-week...15:25
- Plywood, pulp, and paper industry
  - Human - workplace exposure - epidemiology...36:19
- PMM
  - Dog - intravenous - 1-year...16:15
  - Monkey - intravenous - 1-year...16:15
  - Mouse - oral - 30-day...16:15
- Polyacrylamide, see Separan AP30 and Separan NP10
- Polyalkylene glycol ether, see Tergitol nonionic XD
- Polybrominated biphenyls, see also Firemaster, Firemaster FF-1, etc.
- Polybrominated biphenyls
  - Cow - oral - growth...41-3
  - Cow - oral - milk production...41-3
  - Cow - oral - reproduction...41-3
  - Cow - oral - 3-year...6:3
  - Human - environmental exposure - epidemiology...40:15
  - Human - workplace exposure - epidemiology...40:15
  - Rat - diet - 5-week...9:27
  - Rat - gavage - 14-month...10:23

Polychlorinated biphenyl, see also tetrachlorobiphenyl Arochlor, Aroclor
Polychlorinated biphenyls
  Dog - 60-day...8:19
  Human - workplace exposure - epidemiology...35:41
  Rat - diet - 5-week...9:27
  Rat - feed - 47-week...9:23
  Rat - gavage - gestation...18:37
Polydimethylsiloxane
  Rat - oral - 2-year...Food Cosmet. Toxicol. 12(4), 443 (1974)
Polyethylene glycol (mol. wt. 200, 400, 1500, 1540, and 4000)
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Polyethylene glycol homolog, containing 90,000 ethoxyl groups terminated by hydroxyls, see Polyox WSR301
Polyethylene polypropylene glycol, see Ucon 25 H2005 and Ucon 75 H1400
Polygard
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5, 342 (1964)
Polymerized turpentine resin
  Rat - oral - 2-year...Hercules Inc., unpub. data
Polyox WSR 301
  Rat - oral - 2-year...Mellon Institute, unpub. data
Polyoxyethylene (8) stearate, see Mylone 45 or Myrj 45
Polyoxyethylene (20) monopalmitate, see Tween 40
Polyoxyethylene (20) sorbitan monolaurate, see Tween 20
Polyoxyethylene (20) sorbitan monooleate, see Tween 80
Polyoxyethylene (20) sorbitan monostearate, see Tween 60
Polyoxyethylene (20) sorbitan tristearate, see Tween 65
Polyoxyethylene (40) stearate, see Myrj 52
Polyvinyl bromide
  Mouse - skin application...3:7
  Mouse - subcutaneous injection...3:7
  Rat - intragastric intubation...3:7
Polyvinyl chloride particulate
  Guinea pig - inhalation - 18-month...26:27
  Monkey - inhalation - 18-month...26:27
  Rat - inhalation - 18-month...26:27
Polyvinyl chloride, containing vinyl chloride
  Rat - diet...1:8
Polyvinyl chloride, free of vinyl chloride
  Rat - diet...1:8
Ponceau MX
  Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8(5), 281 (1969)
Ponceau SX (C.I. 14700)
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 8(2),306 (1966)
Ponceau 3R (C.I. 16155)
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(1), 105 (1963)
Potash (potassium oxide)
  Human - epidemiology...43:17
Potash (potassium carbonate)
  Human - epidemiology...43:17
Potassium antimonyl tartrate, see tartar emetic
Potassium bromate
  Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents. Tech. Rep. Ser. Wld. Hlth. Org. 281 (1964)
Potassium iodide
  Rat - diet - behavioral teratology...40:5
  Rat - diet - neurobiological effects...40:5
Potassium nitrate
  Rat - feed - 10-week...27:33
Potassium nitrite
  Rat - diet - 10-week...28:31
Printing trades
  Human - workplace exposure - epidemiology...36:5
Procarbazine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 902/AS (NCI #C01810B).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-299 902/AS (NCI #C01810B).
  Wasp - diet - mutagenesis...33:41
Prochlorperazine
  Rat - feed - gestation...21:23
Proflavine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-268 553/AS (NCI #C04137).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-268 553/AS (NCI #C04137).
Propanediol, 2-bromo-2-nitro-1,3-
  Rat - inhalation - 2-year...41:7
Propanil
  E. coli - mutagenesis...24:37
  Human lung culture - mutagenesis...24:37
  Saccharomyces cerevisiae - mutagenesis...24:37
  Salmonella typhimurium - mutagenesis...24:37
n-Propanol
  Mouse - skin painting - lifetime...23:5
Propellant 11, with ortho-dichlorobenzene
  Dog - inhalation...3:3

  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Propellant 11, with isopropanol
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Propellant 11, with methyl ethyl ketone
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Propellant 11, with perchloroethylene
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Propellant 11, with naphthas
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Propellant 11, with toluene
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Propellant 11, with 1,1,1-trichloroethane
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Propellant 11, with trichloroethylene
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Propellants, aerosol
  Cat - inhalation...8:21
  Dog - inhalation...8:21
  Monkey - inhalation...8:21
  Mouse - inhalation...8:21
  Rat - inhalation...8:21
1-n-Propoxy-2-amino-4-nitrobenzene, see P-4000
Propoxyphene
  Rat - feed - gestation...21:25
Propylene
  Mouse - inhalation - 2-year... 7:13
  Rat - inhalation - 2-year... 7:13
Propylene glycol
  Dog - oral - 2-year...Food Cosmet. Toxicol. 9, 479 (1971)
  Rat - oral - 2-year...Food Cosmet. Toxicol. 10, 151 (1972)
Propylene oxide
  Drosophila melanogaster - feed - mutagenesis...27:17
  Monkey - inhalation - 18-month...25:33
  Mouse - inhalation - 2-year...7:15
  Rabbit - inhalation - gestation...27:19
  Rat - inhalation - 13-week...41:11
  Rat - inhalation - 18-month...25:33
  Rat - inhalation - 2-year...7:15, 41:13
  Rat - inhalation - gestation...27:19
  Rat - inhalation - mutagenesis...27:17
Propyl gallate
  Rat - diet - 2-year...7:31
  Rat - oral - 2-year...Advan. Food Res.3, 197 (1951)
  Mouse - diet - 2-year...7:31
n-Propyl gallate
  Mouse - oral - 21-month...Food Cosmet. Toxicol. 12 (1), 125 (1974)
Propyl p-hydroxy benzoate
  Rat - oral - 2-year...J. Amer. Pharm. Ass. 45, 260 (1956)
Pyrazinamide
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 251/AS (NCI #C01785).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-280 251/AS (NCI #C01785).
Pyrethrum
  Rat - oral - 2-year...Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments, Part II. Pesticides 16(2), 47 (1952)
Pyridine hydrochloride, 3-chloromethyl-
  Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 125/AS (NCI #C03838).
  Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 125/AS (NCI #C03838).
Pyridoxine
  Dog - capsule - 100-day...32:29
Pyrimethamine
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 608/AS (NCI #C01683).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-282 608/AS (NCI #C01683).
Pyrolysis effluent
  Hamster - gavage - 20-week...27:3
p-Quinone, dioxime
  Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 501/AS (NCI #C03850).
  Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-291 501/AS (NCI #C03850).
Radiation, see Ionizing radiation, Irradiation, Microwave radiation, Nuclear radiation, Radiofrequency radiation
Radiofrequency radiation
  Human - workplace exposure - epidemiology...36:39
Red phosphorus

  Rat - inhalation...43:9
Red phosphorous, aerosol
  Guinea pig - dermal - acute...38:3
  Mouse - inhalation - acute...38:3
  Rabbit - dermal - acute...38:3
  Rat - inhalation - acute...38:3
Refineries
  Human - carcinogenicity...43:15
Reserpine
  Mouse - diet - 2-year...25:13
  Rat - diet - 2-year...25:13
Resorcinol dimethyl ether
  Rat - oral - 2-year...British
    Industrial Biological Research
    Association Bulletin 8, 265 (1969)
Ribotide
  Rat - oral - 2-year...Toxicology (3),
    341 (1975); and Journal of Takeda
    Research Laboratories (Japan)30,
    614 (1971)
Roccal
  Rat - oral - 2-year...J. Amer. Pharm.
    Ass. Sci. Ed. 40, 263 (1951)
Ronnel
  Rat - oral - 2-year...Summaries of
    Pesticide Toxicity. Association
    of Food and Drug Officials of the
    U.S., Topeka, Kan. (1965)
Roofing asphalt fumes
  Human - workplace exposure - epidemiology...38:35
Rosin, disproportionated, fully
  dimerized, and partially dimerized
  Rat - oral - 2-year...Naval Stores
    Review and Terpene Chemicals
    74 (12), 4 (1965)
Rotenone
  Rat - intraperitoneal - carcinogenicity...40:21
  Rat - oral - 2-year...Chemicals in
    Foods: A Report to the Association
    of Food and Drug Officials on
    Current Developments, Part II.
    Pesticides 16(2), 47 (1952)
Rubber solvent
  Rat - inhalation - gestation...23:21
Ruelene
  Rat - oral - 2-year...J. Agr. Food
    Chem. 11(6), 468 (1963); Toxicol.
    Appl. Pharmacol. 7, 491 (1965)
Saccharin
  Rat - ingestion - lifetime...16:3
  Rat - oral - 2-year...J. Am. Pharm.
    Ass. 40, 583 (1951)
Safrole, see Dihydrosafrole
Santicizer 141
  Rat - oral - 2-year...AMA Arch. Ind.
    Hyg. Occup. Med. 8, 170 (1953)
Santicizer 334F
  Dog - oral - 2-year...Toxicol. Appl.
    Pharmacol. 26, 58 (1973)
  Rat - oral - 2-year...Toxicol. Appl.
    Pharmacol. 26, 58 (1973)
Santomerse No.3
  Rat - oral - 2-year...Toxicol. Appl.
    Pharmacol. 2(6), 641 (1960)
Selenium
  Human - epidemiology...43:13
  Rat - oral - 2-year...Chemicals in
    Foods: A Report to the Association
    of Food and Drug Officials, Part II.
    Pesticides 16(2), 47 (1952)
Selenium disulfide
  Mouse - gavage - 2-year...25:15
  Mouse - skin painting - 2-year...25:15
  Rat - gavage - 2-year...25:15
Selsun
  Mouse - skin painting - 2-year...25:17
Separan AP30 and Separan NP10
  Rat - oral - 2-year...Toxicol. Appl.
    Pharmacol. 7(5), 639 (1965)
Seventy Solvent
  Human - inhalation - 15-minute...25:9
Sewage sludge
  Cow - diet...9:43
Siduron
  E. coli - mutagenesis...24:39
  Human lung culture - mutagenesis...24:39
  Saccharomyces cerevisiae - mutagenesis...24:39
  Salmonella typhimurium - mutagenesis...24:39
Smelter dust
  Rat - intratracheal injection -
    6-month...28:5
Sodium alginate
  Rat - oral - 2-year...Proc. Soc. Exp.
    Biol. Med. 76, 630 (1951)
Sodium alkylbenzenesulfonate
  Rat - oral - 2-year...Toxicol. Appl.
    Pharmacol. 2(4), 464 (1960)
Sodium arsenate
  Rat - drinking water - 6-week...17:33
  Rat - oral - 2-year...Toxicol. Appl.
    Pharmacol. 10, 132 (1967)
Sodium arsenite
  Rat - oral - 2-year...Toxicol. Appl.
    Pharmacol. 10, 132 (1967)
Sodium arsenite aerosols
  Mouse - inhalation - lifetime...19:21
Sodium bisulfite
  Rat - oral - 2-year...J. Pharm. 86,
    37 (1946)
  Rat - feed - 10-week...27:35
Sodium carageenan
  Rat - diet -3-generation...8:9
Sodium chromate
  Rat - oral - 2-year...Food and Drug
    Administration, unpublished data
Sodium cyclamate
  Rat - oral - 2-year...J. Amer. Pharm.
    Ass. 40, 583 (1951)
Sodium 2,2-dichloropropionate
  Rat - oral - 2-year...J. Agr. Food

Chem. 11(6), 468 (1963)
Sodium dichromate
  Rat - intratracheal - 3-year...38:3
Sodium dioctyl sulfosuccinate
  Rat - oral - 2-year...J. Amer. Pharm. Ass. Sci. Ed.37, 29 (1948)
Sodium 2-ethyl hexyl sulfate, see Tergitol anionic 08
Sodium fluoroacetate
  Rat - ingestion - 7-day...14:15
Sodium hexametaphosphate
  Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents (1964). Tech. Rep. Ser. Wld. Hlth. Org. 281
Sodium hydroxide, 3%
  Rabbit - instilled in eye...2:18
Sodium lauryl glyceryl sulfonate
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(3), 402 (1962)
Sodium lauryl sulfate
  Rat - oral - 2-year...J. Amer. Pharm Ass. Sci. Ed.37, 29 (1948)
Sodium lauryl trioxyethylene sulfonate
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 4(3), 402 (1962)
Sodium metabisulfite
  Rat - feed - 10-week...27:37
  Rat - oral - 2-year...Food Cosmet. Toxicol. 10(3), 291 (1972)
Sodium monofluoroacetate, see Compound 1080
Sodium nitrate
  Rat - gavage - 8-week...27:7
  Rat - oral - 2-year...Quarterly Bulletin of the Food and Drug Officials of the U.S. 22, 136 (1958)
Sodium nitrite
  Rat - diet -30-month...9:21
  Rat - diet - behavioral teratology...40:3
  Rat - diet - neurobiological effects...40:3
Sodium 2-(4-styryl-3-sulfophenyl)-2H-naphtho-(1,2-d) triazole
  Rat - oral - 2-year...Food Cosmet. Toxicol. 13 (5), 521 (1975)
Sodium beta-sulfopropionamide
  Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Sodium tripolyphosphate
  Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents (1964). Tech. Rep. Ser. Wld. Hlth. Org. 281
Solvent Yellow No. 14
  Mouse - diet...4:3
  Rat - diet...4:3
Sonacide
  Mouse - gavage - gestation...31:19
Sonalert (with alarm bells and jet engine noise)
  Mouse - whole body - teratogenesis...32:23
Sorbic acid
  Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Sixth Report. Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants. Tech. Rep. Ser. Wld. Hlth. Org.339 (1962); and Food Cosmet. Toxicol. 13(1),31 (1975)
Sorbitan monopalmitate, see Span 40
Sorbitan monostearate, see Span 60
Sorbitan tristearate, see Span 65
Span 40
  Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents. Tech. Rep. Ser. Wld. Hlth. Org. 281. (1964)
Span 60
  Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3),315 (1959)
Span 65
  Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents. Tech. Rep. Ser. Wld. Hlth. Org. 281 (1964)
Stannous chloride
  Mouse - diet - 2-year...7:29
  Rat - diet - 2-year...7:29
Starch acetate
  Rat - oral - 2-year...Food Cosmet. Toxicol. 12 (5/6), 651 (1974)
Steelworkers
  Human - workplace exposure - epidemiology...38:29
Stoddard solvent
  Human volunteers - inhalation - 15-minute...25:5
  Mouse lymphoma cells - mutagenesis...21:11
  Rat - inhalation - gestation...20:9, 23:25
  Rat bone marrow cells - mutagenesis...21:11
  Salmonella typhimurium - mutagenesis...21:11
  Yeast - mutagenesis...21:11
Streptomycin sulfate
  Rat - injection - 22-day...24:21
Streptozotocin
  Dog - intravenous - 46-day...9:3
  Dog - intravenous - 50-day...9:3

  - Monkey - intravenous - 46-day...9:3
  - Monkey - intravenous - 50-day...9:3
  - Wasp - diet - mutagenesis...34:39
- Strobane
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food Drug Officials of the U.S., Topeka, Kan. (1965)
- Styrene
  - Dog - gavage - 15-month...8:45
  - Human - workplace exposure - epidemiology...36:35
  - Rabbit - inhalation...8:43
  - Rabbit - inhalation - teratology...12:5
  - Rat - drinking water - 2-year...8:45
  - Rat - drinking water - 3-generation...8:47
  - Rat - gavage...8:43
  - Rat - gavage - teratology...12:3
  - Rat - inhalation...8:41, 8:43
  - Rat - inhalation - 2-year...8:45
  - Rat - inhalation - teratology...12:5
  - Rat - oral...8:41
- Styrene oxide
  - DNA synthesis bioassay - mutagenesis...37:9
  - Drosophila melanogaster mutagenesis...37:9
  - Mouse - gavage - 2-year...31:3
  - Mouse - inhalation - mutagenesis...37:9
  - Rabbit - inhalation - teratogenesis...37:7
  - Rat - gavage - 2-year...31:31
  - Rat - inhalation - mutagenesis...37:9
  - Rat - inhalation - teratogenesis...37:5
- Sucrol, see Dulcin
- Sudan I
  - Mouse - diet...4:3
  - Rat - diet...4:3
- Sulfallate
  - Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 386/AS (NCI #C00453).
  - Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 386/AS (NCI #C00453).
- Sulfates
  - Mouse - inhalation - 4-month...12:13
  - Rat - inhalation - 90-day...10:33
- Sulfisonazole
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 779/AS (NCI #C50022).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 779/AS (NCI #C50022).
- 3-Sulfolene
  - Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-284 656/AS (NCI #C04557).
  - Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-284 656/AS (NCI #C04557).
- Sulfur dioxide
  - Baboon - inhalation - 6-month...12:39
  - Guinea pig - inhalation - 6-month...12:39
  - Human - inhalation -3-year...13:25
  - Mouse - inhalation -3-month...13:17
  - Rat - inhalation -30-day...12:11
  - Rat - inhalation - 1-year...12:9
- Sulfur dioxide, and high/low salt diets
  - Rat...39:17
- Sulfur dioxide, with smelter dust
  - Rat - inhalation and/or intratracheal - 6-month...28:5
  - Rat - inhalation - 6-month...28:5
  - Monkey - inhalation - 1-year...12:9
- Sulfuric acid
  - Baboon - inhalation - 6-month..12:39
  - Donkey - inhalation - 6-month...16:31
  - Guinea pig - inhalation - 6-month...12:39
  - Human - inhalation - 6-month...13:25
  - Mouse - inhalation - 6-month...13:15
  - Rat - inhalation - 90-day...10:33
- Sulfuric acid mist
  - Human - workplace exposure - epidemiology...35:35
- Sulfuric acid, 10%
  - Rabbit - instilled in eye...2:18
- Sulfuric acid, particulate
  - Guinea pig - inhalation - 60-day...9:17
  - Guinea pig - inhalation - 12-week...11:17
  - Rat - inhalation - 60-day...9:17
  - Rat - inhalation - 6-week...11:19
- Sulfur oxides
  - Rat - inhalation - 90-day...10:33
- Sulphenone
  - Rat - oral - 2-year...Summaries of Pesticide Toxicity. The Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
- Sunset Yellow FCF
  - Mouse - diet...4:2
  - Mouse - oral - 80-week...British Industrial Biological Research Association Bulletin 12 (7),377 (1973)
  - Rat - diet...4:2
- Sweeteners, artificial
  - Human - epidemiology...40:17
- Talc
  - Human - workplace exposure - epidemiology...40:25
- T-2 Toxin
  - Rat - feed - 2-generation...9:33
- Tall oil rosin, pale
  - Rat - oral - 2-year...Naval Stores Review and Terpene Chemicals 74 (12), 4 (1965)
- Tara gum
  - Rat - ingestion -3-generation...11:9

Rat - ingestion - 2-year...12:35
Tartar emetic
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
Tartaric acid
Rat - oral - 2-year...J. Amer. Pharm. Ass.36, 217 (1947)
Tartrazine
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 6(5), 621 (1964)
TDE, see also DDD
TDE
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 367/AS (NCI #C03554).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 367/AS (NCI #C03554).
Telodrin
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 14, 566 (1969)
Telone
Mouse - gavage - 2-year...31:33
Rat - gavage - 2-year...31:33
Terephthalic acid
Rat - feed - 2-year...26:9
Rat - oral - 2-year...Hebrew University, Department of Experimental Medicine and Cancer Research, Jerusalem, Israel, Report for USDA, undated
Tergitol anionic 08
Rat - oral - 2-year...Mellon Institute, unpub. data
Tergitol nonionic TP-9
Rat - oral - 2-year...Mellon Institute, unpub. data
Tergitol nonionic XD
Rat - oral - 2-year...Mellon Institute, unpub. data
Terpene polychlorinates, see Strobane
Tetrabromoethane
Mouse - skin test - lifespan...10:5
2,3,7,8-Tetrachlorodibenzo-p-dioxin
Monkey - ingestion - 1-year...17:31
Rat - diet...2:3
Rat - ingestion...1:7
2,2',5,5'-Tetrachlorobiphenyl
Rat - diet - 2-year...33:19
3,3',4,4' Tetrachlorobiphenyl
Mouse - oral - 18-month...16:43
Mouse - subcutaneous injection - 18-month...16:43
3,3',4',4'-Tetrachlorobiphenyl
Mouse - gavage - teratogenesis...33:11
3,3',5',5'-Tetrachlorobiphenyl
Mouse - gavage - teratogenesis...32:25
Tetrachlorodibenzodioxin
Mouse - oral - 18-month...16:43
Mouse - subcutaneous injection - 18-month...16:43
Tetrachlorodibenzo-p-dioxin
Mouse - gavage - 2-year...24:11
Rat - gavage - 2-year...24:11
1,1,1,2-Tetrachloroethane
Mouse - gavage - 2-year...6:11
Rat - gavage - 2-year...6:11
1,1,2,2-Tetrachloroethane
DNA synthesis bioassay - mutagenesis...37:25
Drosophila melanogaster - mutagenesis...37:25
Mouse - inhalation - mutagenesis...37:25
Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 453/AS (NCI #C03554).
Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-277 453/AS (NCI #C03554).
Rat - inhalation - mutagenesis...37:25
Tetrachloroethylene, see also Perchloroethylene
Tetrachloroethylene
Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-272 940/AS (NCI #C04580).
Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-272 940/AS (NCI #C04580).
2,3,5,6-Tetrachloro-4-nitroanisole
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 642/AS (NCI #C04580).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 642/AS (NCI #C04580).
Tetrachlorvinphos
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 650/AS (NCI #C00168).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 650/AS (NCI #C00168).
Tetradifon
Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)
3,4,3',4'-Tetramethylbiphenyl
Mouse - gavage - teratogenesis...34:17
B-TGDR
Mouse - intraperitoneal injection - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-281 540/AS (NCI #C01581).

  Rat - intraperitoneal injection -
    carcinogenesis...National Cancer Institute
    Bioassay Report available from NTIS,
    order number PB-281 540/AS (NCI #C01581).
  Rat - gavage - 6-month...22:7
Thallium sulfate
  Rat - ingestion - 2-year...10:31
Thallium trioxide
  Rat - inhalation - carcinogenicity...41:5
Thiabendazole
  Rat - gavage - teratology...11:31
4,4'-Thiodianiline
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-280 360/AS
    (NCI #C01707).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-280 360/AS
    (NCI #C01707).
Thiodipropionic acid
  Rat - oral - 2-year...Advan. Food
    Res.3, 197 (1951)
Thio TEPA
  Mouse - intraperitoneal injection -
    carcinogenesis...National Cancer Institute
    Bioassay Report available from NTIS,
    order number PB-285 702/AS, (NCI #C01649).
  Rat - intraperitoneal injection -
    carcinogenesis...National Cancer Institute
    Bioassay Report available from NTIS,
    order number PB-285 702/AS, (NCI #C01649).
Thiourea, see also Urea, thio-
Thiourea
  Rat - oral - 2-year...Science 108,
    626 (1948)
  Wasp - diet - mutagenesis...32:35
Thiram
  Rat - diet - 2-year...30:31
  Rat - oral - 2-year...Summaries of
    Pesticide Toxicity. Association of
    Food and Drug Officials of the U.S.,
    Topeka, Kan. (1965)
Tin
  Mouse - intraperitoneal injection - lifetime...12:37
Titanium
  Mouse - intraperitoneal injection - lifetime...12:37
Titanium dioxide
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-288 780/AS
    (NCI #C04240).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-288 780/AS
    (NCI #C04240).
Tobramycin
  Rat - injection - 22-day...24:17
  Rat - oral - gestation...24:15
Tolazamide
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-284 610/AS
    (NCI #C03327).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-284 610/AS
    (NCI #C03327).
Tolbutamide
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-274 483/AS
    (NCI #C01763).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-274 483/AS
    (NCI #C01763).
Toluene
  Dog - inhalation...3:3
  Human - skin...42:23
  Human - workplace exposure...37:37
  Monkey - skin...42:23
  Mouse - gavage - gestation...20:33
  Mouse - inhalation...3:3
  Mouse lymphoma cells - mutagenesis...21:15
  Rat - inhalation...3:3, 3:8
  Rat - inhalation - 6-month...42:19
  Rat - inhalation - 2-year...13:5
  Rat - inhalation - gestation...20:11, 23:27
  Rat bone marrow cells - mutagenesis...21:15
  Salmonella typhimurium - mutagenesis...21:15
  Yeast - mutagenesis...21:15
Toluene, with isobutane
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Toluene, with propellant 11
  Dog - inhalation...3:3
  Mouse - inhalation...3:3
  Rat - inhalation...3:3
Toluene-2,6-diamine dihydrochloride
  Mouse - diet - 2-year...33:31
  Rat - diet - 2-year...33:33
2,5-Toluenediamine sulfate
  Mouse - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-287 127/AS
    (NCI #C01832).
  Rat - feed - carcinogenesis...National
    Cancer Institute Bioassay Report available
    from NTIS, order number PB-287 127/AS
    (NCI #C01832).
Toluene diisocyanate
  Mouse - gavage - 2-year...5:17
  Rat - gavage - 2-year...5:17
o-Toluenesulfonamide
  Rat - ingestion - lifetime...16:3
o-Toluidine, 5-chloro-
  Mouse - feed - carcinogenesis...National

Cancer Institute Bioassay Report available
from NTIS, order number PB-291 468/AS
(NCI #C02051).
Rat - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-291 468/AS
(NCI #C02051).
p-Toluidine, 3-chloro-
Mouse - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-287 401/AS
(NCI #C02040).
Rat - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-287 401/AS
(NCI #C02040).
o-Toluidine hydrochloride
Mouse - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-290 908/AS
(NCI #C02335).
Rat - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-290 908/AS
(NCI #C02335).
Toxaphene
Mouse - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-292 290/AS
(NCI #C00259).
Rat - feed - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-292 290/AS
(NCI #C00259).
Rat - oral - 2-year...Chemicals in
Foods: A Report to the Association
of Food and Drug Officials on
Current Developments, Part II.
Pesticides 16(2), 47 (1952)
Toxaphene components
Salmonella typhimurium - mutagenesis...21:27
Trace metals
Rat - inhalation - 90-day...10:33
Triallate
E. coli - mutagenesis...24:41
Human lung culture - mutagenesis...24:41
Rat - diet - 3-generation...15:7
Saccharomyces cerevisiae - mutagenesis...24:41
Salmonella typhimurium - mutagenesis...24:41
Tributyl tin
Rat - diet - behavioral teratology...40:9
Rat - diet - neurobiological effects...40:9
1,2,4-Trichlorobenzene
Monkey - oral - 90-day...17:19
2,3,4-Trichlorobutene-1
Dog - inhalation - 90-day...13:27
Rat - inhalation - 90-day...13:27
Rat - inhalation - 2-year...13:27
Rat - inhalation - teratology...13:27
1,1,1-Trichloroethane
Dog - inhalation...3:3
Mouse - gavage - 2-year...8:49
Mouse - gavage - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-265 082/AS
(NCI #C04626).
Mouse - inhalation...3:3
Rat - exposure to vapor...2:10
Rat - gavage - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-265 082/AS
(NCI #C04626).
Rat - gavage - 2-year...8:49
Rat - inhalation...3:3
1,1,2-Trichloroethane
Mouse - gavage - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-283 337/AS
(NCI #C04579).
Rat - gavage - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-283 337/AS
(NCI #C04579).
1,1,1-Trichloroethane, with isobutane
Dog - inhalation...3:3
Mouse - inhalation...3:3
Rat - inhalation...3:3
1,1,1-Trichloroethane, with propellant 11
Dog - inhalation...3:3
Mouse - inhalation...3:3
Rat - inhalation...3:3
Trichloroethylene
Dog - inhalation...3:3
Drosophila melanogaster - mutagenesis...25:25
Mouse - gavage - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-264 122/AS
(NCI #C04546).
Mouse - inhalation...3:3
Mouse - inhalation - long-term...5.3
Mouse - intragastric feeding...2:9
Mouse - skin...2:9
Mouse - subcutaneous injection...2:9
Rabbit - inhalation - teratology...19:17
Rat - gavage - carcinogenesis...National
Cancer Institute Bioassay Report available
from NTIS, order number PB-264 122/AS
(NCI #C04546).
Rat - inhalation...3:3
Rat - inhalation - 2-year...5:3
Rat - inhalation - teratology...19:17
Trichloroethylene, with isobutane
Dog - inhalation...3:3
Mouse - inhalation...3:3
Rat - inhalation...3:3
Trichloroethylene, with propellant 11
Dog - inhalation...3:3
Mouse - inhalation...3:3
Rat - inhalation...3:3
Trichloroethylene epoxide

Mouse - skin...2:7
Trichlorofluoromethane
Mouse - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 187/AS (NCI #C04637).
Rat - gavage - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-286 187/AS (NCI #C04637).
2,4,6-Trichlorophenol
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 770/AS (NCI #C02904).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 770/AS (NCI #C02904).
2,4,5-Trichlorophenoxy acetic acid
Rat - diet...2:8, 2:12
2,4,5-Trichlorophenoxyethyl sulfate, sodium salt
Rat - oral - 2-year...J. Agr. Food Chem. 11(6), 468 (1963)
Trichlorphon
E. coli - mutagenesis...25:41
Human lung culture - mutagenesis...25:41
Saccharomyces cerevisiae - mutagenesis...25:41
Salmonella typhimurium - mutagenesis...25:41
Triethanolamine
Rat - gavage - 8-week...27:7
Trifluralin
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 610/AS (NCI #C00442).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-278 610/AS (NCI #C00442).
2,4,5-Trimethylaniline
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 802/AS (NCI #C02299).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-293 802/AS (NCI #C02299).
1,2,4-Trimethylbenzene
Rat - ingestion - 2-year...10:31
Trimethylphosphate
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 851/AS (NCI #C03781).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 851/AS (NCI #C03781).
Triphenyltin hydroxide
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 645/AS (NCI #C00260).
Tri(polynonylphenyl)phosphite, see Polygard
TRIS
Rat - gavage - 13-week...16:29
Rat - gavage - 9-day...17:9
Trisodium nitrilotriacetate
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 21, 244 (1972)
Tritium
Rat - drinking water - 160-day...12:25
Rat - drinking water - gestation...19:23
Triton X-405
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(6), 782 (1963)
L-Tryptophan
Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 792/AS (NCI #C01729).
Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-285 792/AS (NCI #C01729).
Tween(s) 20, 40, 65, and 80
Rat - oral - 2-year...Joint FAO/WHO Expert Committee on Food Additives --Seventh Report. Specifications for the Identity and Purity of Food Additives and Their Toxicological Evaluation: Emulsifiers, Stabilizers, Bleaching and Maturing Agents. Tech. Rep. Ser. Wld. Hlth. Org. 281 (1964)
Tween 60
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 1(3),315 (1959)
Tylosin
Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 7, 478 (1965)
Ucon 25 H2005
Rat - oral - 2-year...Mellon Institute, unpub. data
Ucon 75 H1400
Rat - oral - 2-year...Mellon Institute, unpub. data
Ucon HB 260
Rat - oral - 2-year...Mellon Institute, unpub. data
gamma-Undecalactone
Rat - oral - 2-year...British Industrial Biological Research Association Bulletin 8, 265 (1969)
Uranium (mining)
Human - workplace exposure - epidemiology...36:31
Urea, 1-phenyl-2-thio-

- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 357/AS (NCI #C02017).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-287 357/AS (NCI #C02017).

Urea, 1,1,3-trimethyl-2-thio-
- Mouse - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 802/AS (NCI #C02186).
- Rat - feed - carcinogenesis...National Cancer Institute Bioassay Report available from NTIS, order number PB-288 802/AS (NCI #C02186).

p-Ureidobenzene arsonic acid, see Carbarsone

Urethane
- Wasp - diet - mutagenesis...32:37

Vanadium
- Mouse - intraperitoneal injection - lifetime...12:37

Vanillin
- Rat - oral - 2-year...Food Cosmet. Toxicol. 5(2), 141 (1967)

Vinyl acetate
- Mouse - oral - 28-day...40:19
- Mouse - inhalation - 28-day...40:19
- Mouse - inhalation - 3-month...40:19
- Rat - oral - 28-day...40:19
- Rat - inhalation - 3-month...40:19
- Rat - drinking water - teratology...40:19
- Rat - inhalation - teratology...40:19

Vinyl bromide
- Mouse - inhalation - 2-year...7:3
- Mouse - skin application...3:5
- Mouse - subcutaneous injection...3:5
- Rat - inhalation - 2-year...7:3
- Rat - intragastric intubation...3:5

Vinyl chloride
- Drosophila - mutagenesis...1:10
- Human - epidemiology, industrial...1:13
- Rat - diet...1:8
- Rat - gavage...1:8
- Rat - inhalation...1:3, 9:9
- Rat - inhalation - long-term...5:5
- Rat - inhalation - 1 1/2-year...9:9
- Salmonella typhimurium - mutagenesis...1:6

Vinyl chloride monomer
- Mouse - inhalation - lifetime...16:45
- Rat - inhalation - lifetime...16:45

Vinyl chloride and ethanol
- Rat - inhalation, drinking water - 1-year...9:9

Vinyl chloride and vitamin C-deficient diet
- Guinea pig - inhalation, diet - 1-year...9:9

Vinyl chloride--vinyl acetate copolymer
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 9, 501 (1966)

Vinylidene chloride
- Mouse - skin test - lifespan...10:9
- Mouse - subcutaneous injection - lifespan...10:9

Vinylidene chloride--vinyl chloride copolymer
- Dog - ingestion - 90-day...5:9
- Mouse - gavage - 2-year...6:9
- Rat - oral - 2-year...J. Agr. Food Chem. 11(6) 468 (1963)
- Rat - gavage - 2-year...6:9
- Rat - ingestion - 90-day...5:9
- Rat - ingestion - long-term...5:9
- Rat - inhalation - 90-day...5:9
- Rat - inhalation - long-term...5:9

Vinylidene chloride monomer
- Mouse - inhalation - lifetime...16:45
- Rat - inhalation - lifetime...16:45

Vitamin A
- Rat - ingestion - lifetime...16:5

Vitamin C-deficient diet and vinyl chloride
- Guinea pig - diet, inhalation - 1-year...9:9

Vitamin E
- Mouse - ingestion - 1 1/2-year...14:13

Wood preservatives
- Human - workplace exposure - epidemiology...40:29

Wood rosin, pale, dark, partially
- hydrogenated, fully hydrogenated, and hydrocarbon-insoluble residue
  - Rat - oral - 2-year...Naval Stores Review and Terpene Chemicals 74 (12), 4 (1965)

Wy-4355
- Dog - intravenous - lifespan...18:3
- Monkey - intravenous - lifespan...18:3

Xylene
- Human volunteers - inhalation - 15-minute...25:7
- Human - skin...42:25
- Monkey - skin...42:25
- Mouse - gavage - gestation...20:35
- Mouse lymphoma cells - mutagenesis...21:17
- Rat - inhalation - gestation...20:13, 23:29
- Rat bone marrow cells - mutagenesis...21:17
- Salmonella typhimurium - mutagenesis...21:17
- Yeast - mutagenesis...21:17

Yellow AB and Yellow OB
- Rat - oral - 2-year...Toxicol. Appl. Pharmacol. 5(1), 16 (1963)

Yttrium
- Mouse - intraperitoneal injection - lifetime...12:37

Zearalenone
- Mouse - diet - 2-year...7:33
- Rat - diet - 2-year...7:33, 40:13
- Rat - diet - lifetime...8:25

Zearanol
- Mouse - oral - 18-month...16:43
- Mouse - subcutaneous injection - 18-month...16:43

Zinc and cadmium
- Rat - feed - 15-month...9:41

Zinc dimethyldithiocarbamate, see Ziram

Zinc sulfate
- Brook trout - aquarium water -3-year...16:39
- Minnow - aquarium water - 6-month...16:37

Zineb

Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Ziram
- Mouse - diet - 17-month...J. Nat. Cancer Inst. 42, 1101 (1969)
- Mouse - diet - 2-year...7:27
- Rat - diet - 2-year...7:27
- Rat - diet - 2-year...J. Pharmacol. Exp. Thera. 116, 29; 118, 174 (1956)
- Rat - oral - 2-year...Summaries of Pesticide Toxicity. Association of Food and Drug Officials of the U.S., Topeka, Kan. (1965)

Zirconium
- Mouse - intraperitoneal injection - lifetime...12:37

Zytel, see Nylon.
- Mouse - gastric intubation - teratology...12:19
- Rat - gastric intubation - teratology...12:19

#

# INDEX OF INSTITUTIONS AND INVESTIGATORS

Aerospace Medical Research Laboratories
  Sponsored studies...11:25, 11:27
Agriculture Canada
  Prior, M.G....14:3
American Petroleum Institute
  Sponsored Studies...20:3, 20:5, 20:5, 20:7, 20:9, 20:11, 20:13, 21:3, 21:5, 21:7, 21:9, 21:11, 21:13, 21:15, 21:17, 23:17, 23:19, 23:21, 23:23, 23:25, 23:27, 23:29, 25:3, 25:5, 25:7, 25:9, 35:3, 35:5, 35:7, 35:9, 35:11, 35:13, 35:15, 35:17, 35:19, 42:9, 42:11, 42:13, 42:15, 42:17, 42:19, 42:21, 42:23, 42:25, 42:27, 43:3, 43:5, 43:7
American Wood Preservers Institute
  Sponsored studies...15:13, 15:15
Arthur D. Little, Inc.
  Thayer, Philip...38:35
Association d'Etudes et de Recherches sur le Bismuth et ses Derives
  Sponsored studies...13:11
Association of Plastic Manufacturers in Europe
  Sponsored studies...40:19
Barriston Research Laboratories, Inc.
  Mulligan, Thomas...37:41
  Palmer, Winifred...38:33
BASF Aktiengesellschaft
  Sponsored studies...32:5, 32:7
Battelle-Columbus Laboratories...7:49, 8:27, 9:3, 14:7, 29:7, 29:9, 29:13
  Barrett, Richard E....9:15
  Castles, Thomas...11:11
  Mitchell, Ralph...26:11, 26:13, 30:3, 30:5, 30:7
  Thake, D....16:15
  Sponsored studies...16:17, 38:37
Battelle Memorial Institute
  Peters, Arthur C....4:2, 4:3, 4:4, 4:5, 4:6, 4:7, 4:8, 4:9, 4:10
  Sponsored studies...43:9
Battelle Pacific Northwest Laboratories
  Buschbom, Ray...9:15
  Dagle, Gerald F...9:15
  Moss, Owen R...9:15
  Renne, R.A....27:39
  Sikov, Mel...37:5, 37:7
  Wehner, Alfred...9:15
  Sponsored studies...37:7
Bio/Dynamics, Inc.
  Rinehart, William...12:29, 12:31, 28:21, 28:23, 29:31, 29:33, 29:35, 29:37, 30:35, 30:37
  Spencer, Peter S....42:17, 42:19
Bio-Research Laboratories, Ltd.
  Procter, B.G....16:9, 16:11
Boston Collaborative Drug Surveillance Program
  Jick, Hershel...42:5
Boston University Medical School
  Slone, Dennis...40:11
  Shapiro, Sidney...40:11
Brookhaven National Laboratory
  Bernstein, David M....39:15
  Costa, Daniel L....39:17, 39:19
  Drew, Robert T....39:15, 39:17, 39:19
  Haber, Sonja B....39:17
  Iwai, Iunichi...39:17
  Tice, Raymond R....39:19
California State Health Department...39:9
Canada Department of the Environment
  Sponsored study...15:17
Carnegie-Mellon Institute of Research
  DePass, L.R....36:9
  Geary, D.L....7:47
  Homan, E.R....7:41, 7:43, 7:45
  Snellings, W.M.... 7:47
  Weil, C.S....7:41, 7:43, 7:45, 23:5, 24:3, 24:5, 36:9, 41:9
  Woodside, M.D....7:41, 7:43, 7:45, 36:9, 41:9
  Yang, Raymond S.H....41:9
Center for Disease Control
  Adams, S...10:21
  Burse, Virlyn W...10:23
  Cannon, Shanklin...14:5
  Heath, Clark...40:15
  Kimbrough, Renate D...10:21, 10:23, 14:5, 32:17
  Liddle, John A...10:21, 10:23
  Smrek, Ann...10:21
Central Institute for Nutrition and Food Research, The Netherlands
  Feron, V. J....1:8, 3:4
  Kuper, Frieke...41:11, 41:13
  Loser, E....13:27, 13:31
  Reuzel, Paul...41:11, 41:13
Centro Medico Sociale Bolognese Per La Prevenzione, La Diagnosi E Lo Studio Dei Tumori
  Maltoni, C...5:7
Chemical Industry Institute of Toxicology
  Couch, David B...26:3, 26:5
  Sponsored Studies...3:8, 3:9, 13:3, 13,5, 13:7, 13:9, 26:7, 26:9, 26:11, 26:13, 30:3, 30:5, 30:7
Children's Hospital Research Foundation
  Brunner, R.S....39:27, 39:29, 40:3, 40:5, 40:7
  Butcher, Richard E....8:5, 21:19, 21:21, 21:23, 21:25, 39:27, 39:29, 39:31, 39:33, 39:35, 39:37, 39:39, 39:41, 40:3, 40:5, 40:7
  Vorhees, C.V....39:27, 39:29, 40:3, 40:5, 40:7
Chlorinated Paraffins Producers, International Toxicology Review Committee
  Hatfield, Kent...38:5, 38:7, 38:9, 38:11, 38:13, 38:15, 38:17, 38:19, 38:21, 38:23, 38:25
Chloroprene Joint Industry Group (DuPont, Bayer, British Petroleum, and Denki Kagaku)
  Sponsored Study...3:4
Chromium Chemicals Producers
  Friedman, Marvin...33:31

Hatfield, Kent...38:31
  Sponsored studies...38:31
Ciba-Geigy, Inc.
  Sponsored studies...32:27, 32:29
City University of New York
  Selikoff, Irving J....1:13
Colorado State University
  Benjamin, Stephen...36:3
Cosmetic, Toiletry & Fragrance Association
  Sponsored Studies...5:11, 5:13, 5:15, 16:13, 28:13, 28:15, 28:17, 28:19, 28:21, 28:23, 28:25, 28:27, 28:29, 29:21, 29:23, 29:25, 29:27, 29:29, 29:31, 29:33, 29:35, 29:37, 29:39, 29:41
Department of Education (Japan)
  Sponsored studies...12:37
Department of Energy
  Generoso, W. M....31:3, 31:5
  Lenhard, Joseph A....31:3, 31:5
  Sponsored studies...27:5, 27:39, 27:41, 31:11, 31:35, 31:37, 32:11, 32:13, 32:15, 33:3, 33:5, 34:41, 39:17, 39:19
Department of the Navy
  Sponsored Studies...20:15
Dow Chemical Company...29:3, 29:5, 41:9
  Kociba, R. J....1:5, 1:7, 1:9, 2:8
  Norris, Jessie...5:9, 8:29, 8:31, 8:33, 8:35, 8:37
  Olson, Kenneth... 8:41, 8:43, 8:45 12:3, 12:5, 19:7, 19:9, 19:11
  Quast, J. F...2:6, 2:10, 19:3, 19:5
  Rampy, L. W....1:2, 15:9, 15:11
  Schwetz, B. A....1:7, 1:9, 1:12, 2:3, 2:8, 2:12
  Thompson, Daniel J....15:27, 15:29
Dow-Corning Corporation
  Sponsored studies...24:5
Duke University Medical Center
  Abou-donian, M.B...19:25, 19:27, 19:29, 19:31
  Huang, Andrew...20:37
DuPont Company
  Clary, J. J....3:6, 13:27, 13:29, 13:31
  Kaplan, A. M....2:2
  Trochimowicz, Henry J....3:6, 17:3, 17:5
  Zapp, Jr., John A....2:5
Edgewood Arsenal
  McNamara, Bernard...1:3
Endocrine Labs of Madison, Inc.
  Davis, James...16:43, 18:31, 18:33
Energy Research and Development Administration
  Sponsored Studies...10:41, 12:41, 15:31
Enviro Control, Inc.
  Goldsmith, Robert...35:35
  Pirages, S...18:17
Environmental Protection Agency
  Benoit, Dwain...16:35, 16:37
  Berman, Ezra...20:41
  Buck, William B....14:33
  Bull, R. J....11:15
  Campbell, K. I....11:13
  Chernoff, Neil...12:19, 12:21, 14:29, 22:33, 22:35, 22:37, 22:39, 31:21, 31:23
  Cunningham, William...14:33
  Curley, August...19:33, 19:35, 19:37
  Fiandt, James...31:7, 31:9, 32:9
  Fox, Donald A....10:25, 10:27
  Gage, Michael...13:37
  George, E. L...11:13
  Gray, L. Earl...13:35, 14:29, 14:31, 31:21, 31:23, 31:25, 31:27
  Hayes, Carl...39:3
  Hinkle, Donald K....22:25, 22:27, 22:29, 22:31
  Holcombe, Gary...16:39, 31:7, 31:9, 32:9
  Hopper, David...14:33
  Iltis, Ramult...11:17
  Kavlock, Robert...31:21, 31:23
  Kernan, William...14:33
  Kirk, Bill...13:33
  Kutzman, Marya...14:31
  Laskey, John...12:25, 12:27, 13:35, 19:41, 21:33, 26:15
  Lawton, David...31:21, 31:23, 31:25, 31:27
  Lee, Si Duk...11:19
  Lewkowski, James P....10:25, 10:27, 18:39
  Lingg, Robert...10:29
  Osthy, Joe...13:33
  Pepelko, William...9:13, 16:33
  Phipps, Gary...31:7, 31:9, 32:9
  Reiter, Lawrence...12:19, 13:35, 14:27, 14:29 19:39
  Rhenberg, Blair...13:33
  Rosenstein, Larry...12:17, 12:23
  Scotti, Thomas...12:19
  Smialowicz, Ralph J....20:39
  Spehar, Robert...16:41, 17:23
  Tardiff, Robert G...10:29
  Wessendarp, Thomas K...10:25, 10:27
  Wiester, Mildred J.... 9:13, 11:17
  Williams, Julius...10:25, 10:27
  Sponsored Studies...9:9, 9:15, 9:17 9:19, 10:31, 10:33, 10:35, 10:37, 10:39, 11:21, 11:23, 12:7, 12:9, 12:11, 12:13, 12:15, 13:13, 13:15, 13:17, 13:19, 13:21, 13:23, 13:25, 14:25, 15:25, 16:31, 17:19, 17:21, 17:25, 19:19, 19:21, 19:23, 19:25, 19:27, 19:29, 19:31, 21:27, 21:29, 21:31, 22:15, 22:17, 22:19, 22:21, 22:23, 23:31, 23:33, 23:35, 23:37, 23:39, 23:41, 24:31, 24:33, 24:35, 24:37, 24:39: 24:41, 25:35, 25:37, 25:39, 25:41, 39:3, 39:5, 39:7, 39:11, 39:13, 39:21, 40:21
Eppley Institute for Cancer Research
  Shubik, Phillipe...5:11, 16:13
Ethyl Corporation
  Sponsored studies...12:29, 12:31, 15:5
Ethylene Glycol Producers
  Sponsored study...7:47
Ethylene Oxide Producers
  Sponsored study....9:7
Food and Drug Administration
  Alleva, Frederic R....24:15, 24:17, 24:19, 24:21

  Berky, J...18:13
  Collins, T.F.X....8:9, 8:11
  Cordle, Frank...40:15, 40:17
  Farber, T.M....8:19
  Graham, Stuart...8:13
  Green, Sidney...8:17
  Grunfeld, Yona...24:23, 24:25
  Gryder, Rosa M....31:3, 31:5
  Herman, E....24:27, 24:29, 25:29
  Littlefield, N....18:9, 18:11
  Schieferstein, G....18:7, 18:15
  Sheu, C.W....25:27, 27:29, 27:31, 27:33,
   27:35, 27:37, 28:31, 28:33, 31:3, 31:5
  Sobotka, T...8:7
  Taylor, Jean M...8:15
  Teske, Richard...6:3, 6:5
  Sponsored Studies...8:5, 8:21, 8:23
    8:25, 9:23, 9:27, 9:29, 9:31,
    9:33, 9:35, 9:37, 9:39, 9:41, 9:43, 11:35
    18:3, 18:5, 20:37, 21:19, 21:21, 21:23,
    21:25, 25:19, 25:21, 25:23, 25:25, 26:35
    31:35, 31:37, 36:3, 39:23, 39:27, 39:29, 39:31,
    39:33, 39:35, 39:37, 39:39, 39:41, 40:7, 40:9,
    40:11, 40:13, 40:21, 41:3, 41:15, 42:3, 42:5,
Food and Drug Research Laboratories, Inc.
  Bailey, David F....9:35
  Cox, George E....40:13
  Gallo, Michael A....8:25
  Re, Thomas A....40:13
  Parent, Richard A....40:13
Foster D. Snell, Inc.
  Keating, John W....15:39
Frederick Cancer Research Center
  Creasie, Donald...30:17, 30:19, 30:21,
   31:29, 31:31, 31:33
  Lijinsky, William...30:23, 30:25, 30:27,
   30:29, 30:31, 30:33
Fukishima Medical School (Japan)
  Hoshishima, K....12:37
Grambling State University
  Jordan, Chester...11:21
Gulf Research & Development Co....42:9, 42:11, 42:13, 42:15
Gulf South Research Institute
  Fletcher, Martin J....15:3
  Wheeler, Ralph...6:7, 6:9, 6:11,
   6:13, 6:15, 6:17, 8:49, 8:51, 21:35,
   21:37, 21:39, 22:11, 22:13, 24:27, 24:13
  Sponsored Studies...29:19
Hair Color Industry
  Sponsored Studies...5:11, 5:13, 5:15
Hazleton Laboratories of America, Inc.
  Coate, William...16:27, 20:3, 35:3,
   35:5, 35:7, 35:9
  Piper, Charles...35:3, 35:5, 35:7, 35:9,
   42:9, 42:11, 42:13, 42:15
  Kapp, Robert...35:3, 35:5, 35:7, 35:9
  Reno, Fred...13:7, 13:9, 29:23, 29:25,
   29:39, 29:41
  Rutter, Henry...18:19, 18:21, 18:27,
   25:15, 25:17, 32:41, 33:23, 33:25,
   33:29
Hazleton Laboratories Europe Ltd....40:19
  Pullinger, D.H....23:3
Health and Welfare - Canada
  Arnold, D.L....16:3, 16:5, 16:7, 39:25
  Moodie, C. A....39:25
  Munro, I.E....39:25
  Sponsored studies...16:11
Huntingdon Research Center
  Ulrich, Charles E....12:7, 15:5, 16:25
Industrial Bio-Test Laboratories
  Goode, John... 3:8, 3:9, 13:3, 13:5
  Johannsen, F. R....15:7
  Keplinger, M.L....5:3, 5:5, 9:33, 11:3,
   11:5, 11:7, 11:9, 12:33, 12:35
  Kinoshita, Florence...9:41
  Lindberg, Dennis...7:3, 7:5, 7:7, 7:9,
   7:11, 7:13, 7:15, 7:17, 7:19, 7:21
  TeVault, Kent...17:17
Inhalation Toxicology Research Institute...8:23
Institute of Chemical Biology
  Furst, Arthur...22:3, 22:5, 23:7, 23:9,
   23:11, 23:13, 23:15
Institut fur biologische Forschung
  Klimisch...32:5, 32:7
  Zeller...32:5, 32:7
Institut Europeen Des Industries De La
  Gomme de Caroubes (INEC)
  Sponsored studies...11:3, 11:5, 11:7, 11:9
   12:33, 12:35
Institute for Medical Research and
  Occupational Health (Yugoslavia)
  Kostial, Krista...10:39
Institute of Toxicology, Bayer A.G.
  Steinhoff, Dieter...38:31
Institut fuer Oekologische Chemie
  Sponsored studies...17:7
Intercompany Acrylate Study Group
  Sponsored Studies...29:3, 29:5
International Institute of Synthetic
  Rubber Producers, Inc.
   Sponsored studies...23:3
International Research & Development Corp.
  Geil, Robert...18:5, 39:23
  Goldenthal, E....5:13, 5:15, 28:13,
   28:15, 28:25, 28:27, 30:39, 30:41
  Leong, Basil...21:3, 28:11
  Wazeter, Francis...18:3, 39:23
  Wilson, Curtis B....25:3
  Sponsored studies...38:5, 38:7, 38:9, 38:11,
   38:13, 38:15, 38:17, 38:19, 38:21, 38:23,
   38:5, 38:7, 38:9, 38:11, 38:13, 38:15, 38:17,
   38:19, 38:21, 38:23
Inveresk Research International, Ltd.
  McGregor, Douglas...37:9, 37:11, 37:13, 37:15,
   37:19, 37:21, 37:23, 37:25, 37:27, 37:29,
   37:31, 37:33
IIT Research Institute
  Ehrlich, Richard...12:13, 13:13, 13:15, 13:17
  Fenters, James...13:13, 13:17

  Henry, M.... 7:49, 9:3, 18:23, 18:25, 18:29
  Holmes, P....24:9, 24:11, 26:7, 26:9
Iowa State University
  Bal, Harpal S....15:23
  Buck, William B....14:33
  Cunningham, William...14:33
  Hopper, David...14:33
  Kernan, William...14:33
Joint Industry Committee on Chloroprene
  Sponsored studies...13:27, 13:29, 13:31
Johns Hopkins University
  Matanoski, Gene...36:27
Kettering Laboratory
  Cooper, G.F....25:5, 25:7, 25:9
  Suskind, Raymond...20:5, 21:5
Lehigh University...39:5
Litton Bionetics Inc.
  Beliles, Robert... 8:39, 8:47, 19:13, 19:15 19:17, 20:7, 20:9, 20:11, 20:13, 23:17, 23:19, 23:21, 23:23, 23:25, 23:27, 23:29, 28:17, 28:19, 28:29, 29:21, 29:27, 29:29, 35:11, 35:13, 38:3
  Brusick, David J....10:31, 21:7, 21:9, 21:11, 21:13, 21:15, 21:17, 35:15
  Garner, F.M....5:17, 5:19, 5:21, 5:23, 5:25, 5:27, 5:29, 5:31, 5:33
  Hart, E. Ross...10:31, 15:33, 15:35, 16:19
  Manus, Alan G...10:31
  Matheson, Dales W...10:31
  Mecler, Francis J...35:11, 35:13, 38:3
  Seibold, Herman R...10:31
Louisiana State University School of Medicine...39:11
Lovelace Foundation for Medical Education and Research
  Damon, Edward G....3:2
  Henderson, Thomas R....3:2
  Mokler, Brian V....3:2
Manufacturing Chemists Association
  Sponsored Studies...5:3, 5:5, 5:7, 5:9, 8:29, 8:31, 8:33, 8:35, 8:37, 8:39, 8:41, 8:43, 8:45, 8:47 12:3, 12:5, 19:3, 19:5, 19:7, 19:9, 19:11, 32:3
Mason Research Institute...29:15, 29:17
  Landon, John C....6:19, 6:21, 6:23, 6:25, 6:27, 33:31, 33:33 6:29, 6:31, 6:33, 6:35, 25:11
Massachusetts General Hospital
  Blank, Irvin H....42:21, 42:23, 42:25, 42:27
Massachusetts Institute of Technology
  Newberne, Paul M....9:21
  Wogan, Gerald...25:19, 25:21, 40:23
Medical Research Council of Canada
  Sponsored studies...15:19, 15:21
Meharry Medical College
  Dwivedig, C...17:11, 17:13
Metropolitan-Denver Sewage Disposal District No. 1
  Baxter, John...9:43
Michigan Department of Public Health
  Wilcox, Kenneth...40:15
Michigan State University
  Hook, J.B...30:9
Microbiological Associates
  Schechtman, L. M....21:29, 21:31, 35:17
  Sponsored studies...35:17
Midwest Research Institute...41:5
  Castles, Thomas...8:27, 11:11
  Lee, C.C....16:45
  Peters, Paul...14:11, 16:23
Mississippi State University
  Wolfe, James L....14:25
  Yarbrough, James D....14:25
Mobil Chemical Company
  Sponsored study...15:3
Mount Sinai School of Medicine
  Lillis, Ruth...38:27
  Nicholson, William...36:5, 36:15
National Cancer Institute
  Hoover, Robert...40:17
  Sponsored Studies...4:2, 4:3, 4:4 4:5, 4:6, 4:7, 4:8, 4:9, 4:10, 4:11, 5:17, 5:19, 5:21, 5:23, 5:25, 5:27, 5:29, 5:31, 5:33, 6:7, 6:9, 6:11, 6:13, 6:15, 6:17, 6:19, 6:21, 6:23, 6:25, 6:27, 6:29, 6:31, 6:33, 6:35, 7:3, 7:5, 7:7, 7:9, 7:11, 7:13, 7:15, 7:17, 7:19, 7:21, 7:23, 7:25, 7:27, 7:29, 7:31, 7:33, 7:35, 7:37, 7:39, 7:49, 8:27, 8:49, 8:51, 9:3 14:7, 15:27, 15:29, 16:15, 16:17 21:35, 21:37, 21:39, 22:11, 22:13 24:7, 24:9, 24:11, 24:13, 25:11, 25:13, 25:15, 25:17, 27:3, 29:7, 29:9, 29:13, 29:15, 29:17, 29:19, 30:17, 30:19, 30:21, 30:23, 30:25, 30:27, 30:29, 30:31, 30:33, 31:29, 31:31, 31:33, 32:11, 32:13, 32:15, 32:41, 33:3, 33:5, 33:21, 33:23, 33:25, 33:27, 33:29, 33:31, 33:33, 34:41, 39:3, 39:5, 39:7, 39:9, 39:11, 39:13, 39:21, 40:29, 41:5, 41:7
National Center for Toxicological Research
  Allaben, William...31:35, 31:37, 40:21
National Food Institute (Denmark)
  Krogh, Palle...9:31
National Health and Welfare (Canada), Department of
  Khera, K.S...11:29, 11:31, 11:33
National Institute of Environmental Health Sciences
  Cook, Reginald...32:21, 32:23
  Dixon, R...17:39, 17:41, 17:43, 17:45
  Fowler, B.A....17:25, 17:27, 17:33
  Lee, I.P....17:35, 17:37
  Lucier, G....18:37
  Marks, Thomas...31:15, 31:17, 31:19, 32:19

33:7, 34:5, 34:7, 34:13, 34:19
  McLachlan, J...18:35
  McRae, Donald...20:29, 33:9
  Moore, J.A...22:7, 22:9
  Nawret, Peter S....32:21, 32:23, 33:9
  Staples, R.E....20:31, 20:33, 20:35, 31:13, 31:15, 31:17, 31:19, 32:19, 32:21, 32:23, 32:25, 33:7, 33:9, 33:11, 34:5, 34:7, 34:9, 34:11, 34:13, 34:15, 34:17, 34:19
  Tilson, H.S....16:49
  Woods, James...1:6
  Sponsored Studies...1:13, 2:4, 2:7, 2:9, 2:11, 2:13, 2:15, 3:1, 3:5, 12:39, 14:13, 14:15, 14:17, 14:19, 14:21, 14:23, 14:25, 16:43, 16:45, 16:47, 17:27, 17:29, 17:31, 18:19, 18:21, 18:23, 18:25, 18:27, 18:29, 18:31, 18:33, 20:17, 20:19, 20:21, 20:23, 20:25, 20:27, 30:9, 31:39, 31:41, 32:31, 32:33, 32:35, 32:37, 32:39, 33:13, 33:15, 33:17, 33:19, 33:35, 33:37, 33:39, 33:41, 34:3, 34:21, 34:23, 34:25, 34:27, 34:29, 34:31, 34:33, 34:35, 34:37, 34:39
National Institute for Occupational Safety and Health
  Allbright, Bruce...35:37, 43:19
  Anger, Kent...16:21, 28:9, 37:3
  Archer, Vic...35:31, 36:31
  Bayliss, D...35:33
  Beaumont, Jay...35:35
  Boeniger, Mark...36:5, 36:29
  Brewer, D...28:3
  Brown, D...35:33, 35:39, 36:7, 36:11
  Brown, Jane...36:7, 36:25, 37:35
  Chrislip, D...28:9
  Coat, William...16:27
  Conover, David...29:11
  Cottrill, Charlotte...35:27
  Cox, Clint...35:27, 36:39
  Crandall, Mike...36:33, 36:35, 43:23
  Donaldson, Harry...38:27, 38:29
  Egan, Betsy...36:7, 36:13, 36:23, 36:39, 37:35
  Fajen, John...35:41, 36:13, 36:23
  Foley, E....29:11
  Halperin, Bill...36:25, 36:33, 43:21, 43:23, 43:25
  Haring, Marie...36:27, 36:29, 36:41
  Herrick, Bob...38:39
  Johnson, Barry...26:33
  Jones, James...35:37
  Kommineni, Choudare...27:7
  Lal, J...28:3
  Lary, J....29:11
  Leffingwell, Sandy...36:15, 38:27, 38:39 43:19
  Lemen, Richard...43:25
  Lewis, Trent...25:31, 25:33, 26:21, 26:23, 26:25, 26:27, 26:29, 41:7
  Ludwig, Howard...35:39
  Mackay, G...28:7
  Meinhardt, Ted...36:21, 36:35
  Moorman, William...15:41, 27:3, 27:5, 38:33, 38:37
  Nelson, B.K....14:9, 37:3
  Niemeier, Richard...27:9, 27:11, 27:13, 27:15, 27:17, 27:19
  Oser, Jim...36:37:37:37
  Platek, F...28:5
  Putz, Vernon...26:31
  Reeve, Gordon...43:21
  Rinsky, Bob...35:29, 36:37, 43:21
  Roberts, Dennis...43:17
  Robinson, Cindy...36:15, 36:19
  Salz, Joyce...38:29
  Selenan, Sherry...35:37, 38:27
  Smith, Blair...35:41
  Setzer, J...28:9
  Stern, Frank...37:37
  Stettler, L...28:5
  Tanaka, Shiro...36:27, 36:41
  Wallingford...43:13
  Waxweiler, Richard...43:15, 43:17
  Wright, Gary...26:17, 26:19
  Young, Mark...35:35
  Zaebst, Dennis...36:27, 36:41
  Zumwalde, Ralph...35:29, 35:31, 36:15
  Sponsored Studies...14:9, 14:11, 15:37, 15:39 16:23, 16:25, 17:15, 17:17, 18:17, 19:13, 19:15, 19:17, 28:11, 35:27, 35:29, 35:31, 35:33, 35:35, 35:37, 35:39, 35:41, 36:5, 36:7, 36:11, 36:13, 36:15, 36:19, 36:21, 36:23, 36:25, 36:27, 36:29, 36:31, 36:33, 36:35, 36:37, 36:39, 36:41, 37:3, 37:5, 37:7, 37:9, 37:11, 37:13, 37:15, 37:17, 37:19, 37:21, 37:23, 37:25, 37:27, 37:29, 37:31, 37:33, 37:35, 37:37, 37:39, 37:41, 38:27, 38:29, 37:33, 38:35, 38:37, 38:39, 40:25, 40:27, 40:29, 41:5, 43:13, 43:15, 43:17, 43:19, 43:21, 43:23, 43:25
National Oceanic and Atmospheric Administration
  Engel, David W...17:25
National Science Foundation
  Sponsored Studies...10:3, 10:5, 10:7, 10:9, 10:11, 10:13, 10:15, 10:17, 10:19, 17:11
New Jersey Department of Health...39:3
New York University Medical Center
  Goldschmidt, B.M....2:4, 2:7, 2:9 2:11, 2:13, 2:14, 3:1, 3:5, 10:3, 10:5, 10:7, 10:9, 10:11, 10:13, 10:15, 10:17, 10:19
  Kline, S....10:3, 10:5, 10:7, 10:9, 10:11, 10:13, 10:15, 10:17, 10:19
  Lippman, Morton...16:31
  Loewengart, G... 2:4, 2:7, 2:9 2:11, 2:13, 2:14, 3:1, 3:5
  Melchionne, S.... 2:4, 2:7, 2:9, 2:11, 2:13, 2:14, 10:3, 10:5, 10:7, 10:9, 10:11, 10:13, 10:15, 10:17, 10:19
  Smith, A... 2:4, 2:7, 2:9, 2:11, 2:13, 2:14, 3:1, 3:5, 10:3, 10:5, 10:7, 10:9, 10:11, 10:13, 10:15, 10:17, 10:19

Stern, Frank...36:5
VanDuuren, B.L...2:4, 2:7, 2:9, 2:11, 2:13, 2:14, 3:1, 3:5, 10:3, 10:5, 10:7, 10:9, 10:11, 10:13, 10:15, 10:17, 10:19
Northrop Services, Inc.
  Palekar, Lalita...12:15
Oak Ridge National Laboratory
  Slaga, Thomas J....15:31, 27:41, 32:11, 32:13, 32:15, 33:3, 33:5, 34:41
  Trabalka, John...12:41
  Sponsored studies...43:11
Ohio Agricultural Research & Development Center
  Willett, L.B....41:11
Ohio State University Research Foundation
  Capen, Charles...9:23
Oregon State University
  Sinnhuber, R.O....17:29
Pennsylvania State University
  Zarkower, Arian...13:21
Pharmaceutical Manufacturers Association
  Sponsored Studies...30:35, 30:37, 30:39, 30:41
Propylene Oxide Producers, Europe & U.S.A.
  Sponsored studies...41:11, 41:13
Purdue Research Foundation
  Carlson, Gary P....9:19
  Carlton, William...32:27, 32:29
  Hoover, Dennis...32:27, 32:29
  Mennear, John H....14:19
  Yau, Eddie T....14:19
Rohm and Haas Company
  Smith, J. M....29:3, 29:5
Scripps Clinic and Research Foundation
  Dixon, Frank J....25:3
Silesian Medical Academy (Poland)
  Herman, Zbigniew S....13:19
Sloan-Kettering Institute for Cancer Research
  Marquardt, H.W.J....4:11
  Zedeck, M.S....4:11
Southern Research Institute
  Denine, E.P.... 14:7, 16:17, 29:7
  Prejean, David...7:23, 7:25, 7:27, 7:29, 7:31, 7:33, 7:35, 7:37, 7:39 25:13
Southwest Foundation for Research and Education
  Green, Nathan...12:39
SRI International
  Dilley, James V....15:37
  Evans, Michael...14:21
  Freeman, August...12:9
  Freeman, Gustav...14:21, 14:35
  Furiosi, N.J....14:35
  Gaffey, William...35:31, 36:19
  Giever, Paul...36:33
  Jorgensen, Ted...10:35, 10:37
  Juhos, L.T....14:35
  Kaplan, Joel...13:23
  Kaplan, Sam...35:39
  Lunan, Kenneth...14:21
  Negi, Dalbir...14:21
  Newell, Gordon...10:35, 10:37
  Simon, Vincent...10:35, 10:37, 22:15 22:17, 22:19, 22:21, 22:23, 23:31, 23:33, 23:35, 23:37, 23:39, 23:41, 24:31, 24:33, 24:35, 24:37, 24:39, 24:41, 25:11, 25:13, 25:15, 25:17, 25:35, 25:37, 25:39, 25:41
  Stevens, Robert...14:21
State University of New York
  Kuschner, Marvin...15:25
Stewart-Todd Associates, Inc...40:29
St. Augustines College
  Johnson, W. W....19:23
Supply and Services - Canada
  Sponsored studies...16:9
Tabershaw Occupational Medicine Associates
  Lamm, Stephen...32:3
Temple University School of Medicine
  O'Neill, John J....17:21
Thermal Insulation Manufacturers Association...39:15
Thermo Electron Corp.
  Fine, David...36:13
Thomas Jefferson University
  Aponte, Gonzalo E....30:11, 30:13, 30:15,
  Triolo, Anthony J....30:11, 30:13, 30:15
Tracor-Jitco Inc.
  4:2, 4:3, 4:4, 4:5, 4:6, 4:7, 4:8, 4:9, 4:10, 5:17, 5:19, 5:21, 5:23, 5:25, 5:27, 5:29, 5:31, 5:33, 6:7, 6:9, 6:11, 6:13, 6:15, 6:17, 6:19, 6:21, 6:23, 6:25, 6:27, 6:29, 6:31, 6:33, 6:35, 7:3, 7:5, 7:7, 7:9, 7:11, 7:13, 7:15, 7:17, 7:19, 7:21, 7:23, 7:25, 7:27, 7:29, 7:31, 7:33, 7:35, 7:37, 7:39, 8:49, 8:51 21:35, 21:37, 21:39, 22:11, 22:13, 24:7, 24:9, 24:11, 24:13, 25:11, 25:13, 25:15, 25:17, 29:13, 29:15, 29:17, 29:19, 33:21, 33:23, 33:25, 33:27, 33:29, 33:31, 33:33
Tulane University Medical Center
  Gordon, R....21:41, 39:21
Union Carbide Corp.
  Sponsored studies...7:41, 7:43, 7:45, 23:5, 24:3, 24:5, 36:9, 36:17, 41:9
University of California, Berkeley
  Bertau, Peter E....19:21
University of California, Irvine
  Casida, John E....21:27
  Folinsbee, Larry...13:25
  Haun, C.C....11:25, 11:27
  Horvath, Steven...13:25
  MacEwen, J. D....11:25, 11:27
  Vernot, E.H....11:25, 11:27
University of California, Los Angeles
  El sayed, N....10:33
  Hacker, A.D....10:33, 29:9
  Mustafa, M.G...10:33
  Ospital, J.J...10:33
  Tierney, D.F...10:33
University of California Medical Center

Maibach, Howard I....42:21
University of Chicago
Vesselinovitch, Stan D....9:39
University of Cincinnati
Brooks, Stuart... 9:17
Christian, Robert...9:9
Cooper, G.P....9:17
Finelli, Vincent N....19:19
Foulkes, Ernest C...11-23
Hastings, Lloyd... 9:17
Johnson, Dale R....14:23
Kleinman, Leonard...14:23
Mattheis, Eula Bingham...9:9
Radike, Martha... 9:9
Smith, Carl C....17:19
Suskind, Raymond R....43:3, 43:5, 43:7
Vinegar, Allen... 9:17
Warkany, Josef... 9:9
University of Delaware
Clark, Arnold...31:39, 31:41, 32:31, 32:33, 32:35, 32:37, 32:39, 33:35, 33:37, 33:39, 33:41, 34:21, 34:23, 34:25, 34:27, 34:29, 34:31, 34:33, 34:35, 34:37, 34:39
Hamilton, David...31:39, 31:41, 32:31, 32:33, 32:35, 32:37, 32:39, 33:35, 33:37, 33:39, 33:41, 34:21, 34:23, 34:25, 34:27, 34:29, 34:31, 34:33, 34:35, 34:37, 34:39
Smucker, Luellen...31:39, 31:41, 32:31, 32:33, 32:35, 32:37, 32:39, 33:35, 33:37, 33:39, 33:41, 34:21, 34:23, 34:25, 34:27, 34:29, 34:31, 34:33, 34:35, 34:37, 34:39
University of Florida
Woodard, Jane C....9:37
University of Illinois
DeTraglia, Dave...36:11
Reynolds, Wynetka Ann...14:17
University of Leiden,
The Netherlands...1:10
University of Minnesota
Csallang, A. Saari...14:13
University of Missouri
Van Gelden, Gary...15:13, 15:15
University of New Orleans
Langacre, A....21:41
University of North Carolina Medical School
Kimmel, C.A....16:47
University of Notre Dame
Pleasants, Julian R...11:35
Reyniers, Jon...11:35
University of Ottawa
Merali, Z....15:21
University of Pennsylvania
Aviado, Domingo...3:3, 8:21
University of Pittsburgh
Redmond, Carol...38:29
Universite Rene Decartes
Gonzales-Rios, Fernando...13:11
Ilies, A...13:11
Khalyl, Maryse...13:11
Tewari, Neeta...13:11

Wegman, R...13:11
University of Rochester School of Medicine and Dentistry
Clarkson, Tom...41:15
Cox, Christopher...41:15
Garmon, Robert...14:15
Hempelmann, Louis...42:7
Kostyniak, Paul J...10:41
Marsh, David...41:15
Shore, Roy E....42:7
Smith, Frank A...10:41, 14:15
Woodward, Elizabeth...42:7
University of Saskatchewan
Loew, F.M....15:17
University of Texas
Legator, Marvin...28:35, 28:37, 28:29, 28:41
University of Utah
D'Andrew, J.A....20:27
University of Washington
Felton, S.P....17:27
Franz, Thomas J....42:21, 42:25, 42:27
Kincaid, Ronald L....42:3
Lovely, Richard...20:15, 20:17, 20:19, 20:21, 20:23, 20:25
University of Western Ontario
Goyer, R.A....15:19
University of Wisconsin
Abrahamson, Seymour...25:23, 25:25 26:35, 26:37, 26:39, 26:41, 27:21, 27:23, 27:25, 27:27
Allen, S.R....17:31, 33:13, 33:15, 33:17, 33:19, 34:3
Peters, Henry...39:13
U.S. Army Medical Bioengineering Research and Development Laboratory
Sponsored studies...15:33, 15:35, 16:19, 38:3, 43:9, 43:11
U.S. Consumer Product Safety Commission
Osterberg, Robert E...2:15, 2:16, 16:29
Seabaugh, Van M...17:9
Ulsamer, Andrew G....2:17
Wright, Paddy L.... 2:18
Sponsored Studies...1:3, 3:2, 3:3
U.S. Public Health Service
Sponsored studies....17:13
Veterans Administration
McAfee, Robert...21:41
Warf Institute, Inc.
Harris, D.L...9:29
West Virginia University
Bell, John...31:11
Westab, Inc.
Hunt, Joseph...38:27
Forbes, Cindy...38:27
Westat, Inc.
Durako, Steve...39:7
Yale University
Dejesus, Pacifico...17:15

#

TOXICOLOGY
INFORMATION
PROGRAM

# SMITHSONIAN SCIENCE INFORMATION EXCHANGE
# NOTICE OF RESEARCH PROJECT

SSIE NUMBER

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY: Be brief—200 word maximum (Include Objective, Approach, Current Plans and/or Progress)

*Before completing this form, please see reverse side for instructions.*

SI-SSIE 76

# INSTRUCTIONS FOR FILLING IN THE FORM

## SUPPORTING ORGANIZATION

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract should be included here.

## PROJECT TITLE

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

## INVESTIGATOR(S)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division", "research division", or "toxicology branch".

## PERFORMING ORGANIZATION

Enter name of organization where work is actually being done.

## START DATE, END DATE AND ANNUAL FUNDING

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

## PROJECT SUMMARY

Please include as a minimum the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.

2. The type of organism or test system being used including strain or genus and species wherever appropriate.

3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).

4. Duration of administration of the test compound or agent and the length of followup studies.

5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

## SEND ALL NOTICES OF RESEARCH PROJECTS DIRECTLY TO:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20014
Telephone: (301) 496-1131

TOXICOLOGY
INFORMATION
PROGRAM

# SMITHSONIAN SCIENCE INFORMATION EXCHANGE
# NOTICE OF RESEARCH PROJECT

SSIE NUMBER

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address,
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY: Be brief—200 word maximum (Include Objective, Approach, Current Plans and/or Progress)

Before completing this form, please see reverse side for instructions.

SI-SSIE 75

## INSTRUCTIONS FOR FILLING IN THE FORM

### SUPPORTING ORGANIZATION

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract should be included here.

### PROJECT TITLE

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

### INVESTIGATOR(S)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division", "research division", or "toxicology branch".

### PERFORMING ORGANIZATION

Enter name of organization where work is actually being done.

### START DATE, END DATE AND ANNUAL FUNDING

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

### PROJECT SUMMARY

Please include as a minimum the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

### SEND ALL NOTICES OF RESEARCH PROJECTS DIRECTLY TO:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20014
Telephone: (301) 496-1131

☆ U. S. GOVERNMENT PRINTING OFFICE : 1980 [illegible]

The National Toxicology Program announces the availability of three just released publications --

- NTP Annual Plan for Fiscal Year 1980 (NTP-79-7)
- NTP Review of Current DHEW Research Related to Toxicology (NTP-79-11)
- NTP TECHNICAL BULLETIN

The 1980 NTP Annual Plan contains information on the NTP's research, testing, and validation efforts for the coming fiscal year as well as for the previous fiscal year. This 117-page report divides into ten sections: Introduction and Executive Summary, Background, Participating Agencies, Oversight and Review, Planning Assumptions and Program Balance, Organization, Toxicology Research and Testing Overview, Coordinative Management Activities, Information Generation and Dissemination, Annual Report on Carcinogens.

A companion to the NTP Annual Plan is the 334-page NTP Review of Current DHEW Research Related to Toxicology. This compilation emphasizes three major areas: DHEW agencies' Role in the Support of Toxicology Research, Testing, and Method Development: Chemical Compounds Currently Being Tested by DHEW Agencies for Toxicological Properties; Toxicology Methods Currently Being Developed by DHEW Agencies.

The NTP TECHNICAL BULLETIN series will serve as the NTP communication medium to keep all those interested in the NTP informed about the NTP's most current and proposed activities.

For the NTP Annual Plan for Fiscal Year 1980, the NTP Review of Current DHEW Research Related to Toxicology, or the NTP TECHNICAL BULLETIN, please address your request to:

Ms. Leslie Gardner
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

DEAR READER

TOX-TIPS will be carrying announcements of National Toxicology Program (NTP) publications as well as notices of testing projects sponsored by NTP. Please see inside back cover for further details.

Subscription rates for TOX-TIPS and TOXICOLOGY RESEARCH PROJECTS DIRECTORY (TRPD) change effective January 1, 1980:

| | |
|---|---|
| TOX-TIPS | |
| North American Continent addresses | $35 |
| All others | $70 |
| TOXICOLOGY RESEARCH PROJECTS DIRECTORY | |
| North American Continent addresses | $65 |
| All others | $130 |

All subscription matters are handled by NTIS only. Please see inside front cover for address.

Carol B. Haberman
Carol B. Haberman
Editor, TOX-TIPS

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

READEX FICHE best copy available

All issues available have been filmed. Unfortunately, any scattered missing issues are no longer available.

68

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

PB82-915001
NUMBER 68
JANUARY 1982

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

NEWARK PUBLIC LIBRARY
APR 16 1982
U. S. GOVT. PUBS.
DEPOSITORY 376

TABLE OF CONTENTS

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 INTERNATIONAL TOXICITY TESTING GUIDELINES
13 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
19 Tests for Toxicologic and Carcinogenic Effects: Status of Acetaldehyde
21 Tests for Toxicologic and Carcinogenic Effects: Status of Cadmium Oxide
23 Tests for Toxicologic and Carcinogenic Effects: Status of Cadmium Sulfide
25 Tests for Toxicologic and Carcinogenic Effects: Status of C.I. Direct Blue 1
27 Carcinogenesis Bioassay of C.I. Direct Blue 15
29 Tests for Toxicologic and Carcinogenic Effects: Status of Polyvinylpyrrolidine Polymers
31 Tests for Toxicologic and Carcinogenic Effects: Status of Sodium Arsanilate
33 Tests for Toxicologic and Carcinogenic Effects: Status of 2,4,5-Trichlorophenol
35 Tests for Toxicologic and Carcinogenic Effects: Status of Vinylidene Fluoride
37 SUPPORTING AND PERFORMING ORGANIZATIONS
41 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
45 INDEX OF COMPOUNDS
47 NOTICE OF RESEARCH PROJECT BLANK FORM
51 TDB CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20. 3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:

| | |
|---|---|
| North American Continent addresses | $40 |
| All others | $80 |

Bulk rates available on request from NTIS

---

## FROM THE EDITOR

Dear Colleague:

TOX-TIPS is in its sixth year of publication. The monthly issues continue to report brief descriptions of testing programs and epidemiology studies to determine the toxicity of chemical substances.

As the format of this first issue of 1982 suggests, greater emphasis is being placed on presenting developments in testing methodologies and requirements to TOX-TIPS readers. Your comments on this coverage are appreciated.

As you know, TOX-TIPS is a project designed primarily to prevent the inadvertent duplication of toxicity testing. Participation by investigators from government, industrial, and academic organizations is necessary if the material published is to describe the current status of testing programs. Blank TOX-TIPS pages are included at the end of each issue and are provided to facilitate submission of brief descriptions of projects as they are initiated. Your participation in the TOX-TIPS program is most welcome. You can obtain additional information by reaching me at 301-496-1131.

Carol B. Haberman
EDITOR, TOX-TIPS

**WORLD HEALTH ORGANIZATION**
International Agency for Research on Cancer

# SHORT COURSE ON STATISTICAL METHODS IN CANCER EPIDEMIOLOGY

## IARC, Lyon, France - 19-23 July 1982

The course is intended for statisticians with a background in applied statistics, who are interested in the problem of cancer epidemiology, or epidemiologists who are interested in the quantitative statistical methods now available for analytical epidemiology.

**Lectures will be complemented by practical sessions, where exercises based on the methods introduced in the course will be worked using real data examples. All presentations will be accompanied by guidelines to the appropriate statistical software.**

### THE COURSE WILL COVER:

*Alternative measures of risk and their relations to incidence rates*
*Estimation of risk from different types of study*
*Design and analysis of case-control studies; relative merits of various designs and implication for the analysis*
*Matched and unmatched logistic regression*
*Design and analysis of cohort studies*
*Proportional hazard model as a general methodology for both case-control and cohort studies*
*In-depth discussion of problems of bias and of confounding effects*

**Special emphasis will be placed on regression methods for the analysis of incidence rates and relative risks, and the relationship of these methods to more traditional methods based on standardized ratios and cross tabulations.**

### THE FACULTY FOR THE COURSE WILL INCLUDE:

N.E. Breslow, Seattle, USA
D. Hémon, Villejuif, France
J. Peto, Oxford, UK
P.G. Smith, London
D. Trichopoulos, Athens

N.E. Day, J. Estève, R. Saracci, J. Wahrendorf, IARC

The working language of the course will be English, and participants will be expected to have a reasonable knowledge of spoken English.

No charge will be made for the course but participants will be expected to find their own support for travel and accommodation. IARC may be able to provide limited financial assistance for accommodation to a selected number of participants.

FURTHER INFORMATION AND APPLICATION FORMS MAY BE OBTAINED FROM:

The Head, Research Training and Liaison Programme, International Agency for Research on Cancer, 150 cours Albert Thomas, 69372 Lyon Cedex 8 - FRANCE.

**THE CLOSING DATE FOR RECEIPT OF APPLICATIONS IS 15 APRIL 1982**

# INTERNATIONAL TOXICITY TESTING GUIDELINES

Norbert P. Page, D.V.M.
National Library of Medicine

Considerable progress has been made in achieving internationally agreed-upon guidelines which are now being utilized on a world-wide basis. These have been developed by the Organization for Economic Cooperation and Development (OECD). In May 1981 the OECD Council formally approved a series of 51 guidelines to test for various effects of chemicals on man and the environment. These have now been published and are available from the OECD (1).

Development of testing guidelines is part of a continuing effort started in 1977 by the Chemicals Programme of the OECD to harmonize regulatory approaches to chemical control, especially in the areas of testing, assessment and information exchange. The goal of having agreed-upon guidelines is to achieve international acceptance of test results, thus reducing duplicative testing which may be necessary to satisfy the requirements of many countries. The guidelines released have been in four areas: physical-chemical properties, degradation - accumulation, ecotoxicity, and toxicology.

The development of OECD guidelines is a rather rigorous process, including initial proposal by at least two OECD member countries, further development by OECD Scientific Expert Groups, national review and comment, revisions by the Expert Groups, formal approval by the Council of the OECD, and finally publication. The published guidelines are now in the process of being utilized by OECD member countries. The OECD consists of 24 countries including those of the European Economic Community (Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Spain and the United Kingdom), plus Australia, Austria, Canada, Finland, Iceland, Japan, New Zealand, Portugal, Norway, Sweden, Switzerland, Turkey and the United States. Yugoslavia participates in a special status. The number of countries in the OECD is less than that of the United Nations or World Health Organization; however, it includes the major chemical producing and exporting countries which account for over 70% of the world production and trade of chemicals and virtually all development of new commercial chemicals.

## PHYSICAL/CHEMICAL GUIDELINES

Sixteen guidelines in this category were selected for: (a) mobility, degradation, accumulation, or (b) prerequisite needs or guidance for performing other relevant tests, e.g., water solubility or vapor pressure. Many were subjected to round-robin laboratory intercomparison studies prior to acceptance. The expert group utilized existing guidelines of the American Society for Testing Materials (ASTM), the International Standards Organization (ISO), and those in use in member countries. The tests for physical/chemical properties are generally relatively simple, quick and low-cost.

---

(1) The OECD guidelines are available from: OECD Publications Office, 2, rue Andre-Pascal, 75775 Paris Cedex 16, France, or in the United States from the OECD Publications and Information Center, Suite 1207, 1750 Pennsylvania Avenue, N.W., Washington, D.C. 20006 (phone 202-724-1857).

## DEGRADATION/ACCUMULATION GUIDELINES

Fifteen test guidelines in this category are for: ready biodegradability - 5 tests; inherent biodegradation - 3 tests; biodegradation in soil; a simulation test for aerobic sewage treatment; and bioaccumulation in fish - 5 tests. Most of these tests are also relatively simple and low-cost.

## ECOTOXICOLOGY GUIDELINES

Three guidelines were published which involve tests that use algae, Daphnia, and fish to assess for possible ecological effects. Algae is used as a model for effects on plant systems in general. It is a low-cost, easy test to conduct, consisting of adding the test chemical in various concentrations to growing algae cultures with monitoring of growth, post exposure, for 96 hours. Growth retardation is the measured effect. Daphnia, commonly known as the water flea, is a model for effects of chemicals on small organisms. It also is a simple and inexpensive test with various concentrations added to water containing the organism. Lethality, swimming ability, and reproduction are the parameters assessed. An acute toxicity test in fish entails adding various concentrations of test chemical to water containing the fish with lethality measured for at least 96 hours. It is a very flexible guideline with seven species of fish considered acceptable.

## TOXICOLOGY GUIDELINES

Seventeen toxicology guidelines for testing of potential human effects have been published by the OECD (Table 1). In addition to the published guidelines, several others are in various stages of development. Table 2 lists those that are currently in draft form and available for review at the Office of International Chemical Affairs, Office of Pesticides and Toxic Substances, Environmental Protection Agency, Washington D.C. 20460. A concerted effort was made to develop guidelines that are sensitive to detect effects but are also cost-effective. In addition, ways were sought to reduce the use of laboratory animals, especially dogs and rabbits. Examples of such cost-saving approaches are: use of limit tests, i.e., preliminary screening or trial tests; exemption from testing based upon results of prior tests or physical/chemical properties; and abbreviated tests. Abbreviated tests were developed where an analysis indicated that a reduction in certain parameters used in previous guidelines, e.g., number of animals, extent of pathology, or shorter duration, would not substantially reduce the reliability of the test. An example of such a cost-saving procedure is the use of 12 months duration for the chronic toxicity test (non-carcinogenicity) rather than 24 months or lifetime as often used in the past. Another example is the exemption from testing for eye irritation when a positive response was obtained from a skin irritation test or when the pH of the material is highly acidic or basic. The rationale is that the probability of eye irritation is extremely high and the compound would be labelled as an irritant or corrosive without testing in the eye. Salient features of the health effects guidelines are presented in Tables 3 - 9.

## Table 1. Published OECD Guidelines for Health Effects

Acute Oral Toxicity
Acute Dermal Toxicity
Acute Inhalation Toxicity
Acute Dermal Irritation/Corrosion
Acute Eye Irritation/Corrosion
Skin Sensitisation
Repeated Dose Oral Toxicity - Rodent: 14/28 day
Subchronic Oral Toxicity - Rodent: 90-day
Subchronic Oral Toxicity - Non-Rodent: 90-day
Repeated Dose Dermal Toxicity - 21/28 day
Subchronic Dermal Toxicity - 90-day
Repeated Dose Inhalation Toxicity - 14/28 day
Subchronic Inhalation Toxicity - 90-day
Teratogenicity
Carcinogenicity Studies
Chronic Toxicity Studies
Combined Chronic Toxicity/Carcinogenicity Studies

## Table 2. OECD Drafted Guidelines for Health Effects

Acute Delayed Neurotoxicity Study
Subchronic Delayed Neurotoxicity Study
One-generation Reproduction and Fertility Study
Two-generation Reproduction and Fertility Study
Toxicokinetics
Salmonella typhimurium reverse mutation Assay (Ames test)
E. coli WP-2 Reverse Mutation Assay
In vivo Mammalian Bone Marrow Cytogenetics
In vitro Mammalian Cytogenetics
Micronucleus test
In vitro mammalian Cells Gene Mutation Tests
    I. Mouse Lymphoma 15178Y Cells
    II. CHO Cells
    III. V-79 cells
Sex-linked Recessive Lethal Test in Drosophila melanogaster
Rodent Dominant Lethal Test

## Table 3. Acute Toxicity Tests (Oral, Dermal, Inhalation)

Species: Oral and Inhalation Tests - Rat preferred

Dermal Test - Rat, Rabbit or Guinea Pig preferred

Number of Animals: 5/sex/dose level

Number of Dose Levels: At least 3, one above 50% lethality and other less than 50% lethality

Dosing: Oral - Single dose or fractionated dose over period of 24 hours or less

Dermal - Single application for 24 hour period

Inhalation - 4 hour exposure

Observation Period: At least 14 days

Clinical Examination: Observations only, no laboratory tests required; weekly body weights

Pathology: Gross examination of those that die or show toxic effects. No microscopic examination.

Limit Tests: Oral - 5000 mg/kg
Dermal - 2000 mg/kg
Inhalation - 5 mg/kg

## Table 4. Irritation Tests (Dermal, Eye)

Species: Rabbit preferred

Number of Animals: Minimum 3

Number of Dose Levels: 1

Dosing: Dermal - 0.5 ml or 0.5 gm for 4 hours to 6 cm3 area

Eye - 0.1 mg or 100 mg to one eye, eye lids held together for one second; do not wash for 24 hours; anesthetic can be used if needed

Observation Period: Dermal - Minimum 72 hours (negative); Maximum 14 days to observe for reversibility

Eye - 72 hours

Clinical Examinations: Only examinations of skin or eye required; grading at 1, 24, 48 and 72 hours

Pathology: None required

## Table 5. Skin Sensitisation (Seven tests available)

Species: Guinea Pig recommended

Number of Dose Levels: Usually 1

Number of Animals: 6-25

Induction Exposures: 1-20 intradermal or dermal injections usually at frequency of 1-7 days

Challenge Exposures: 1-2 intradermal or dermal exposures 14-35 days after induction period

Evaluation: Examination and gradings up to 72 hours after challenge exposure

## Table 6. Repeated Dose and Subchronic Toxicity Tests

| | Repeated Dose | Subchronic Test |
|---|---|---|
| Species | Oral & Inhalation: Rat preferred | Oral: Rodent (rat) Non-rodent (dog); Inhalation: Rat |
| | Dermal: Rat, rabbit or guinea pig | |
| Number of Animals (sex/dose): | 5 | 10 |
| Number of Dose Levels: | 3 | 3 |
| Duration of Exposure/ Observation Period: | 14-28 days (Dermal: 21-28 days) | 90 days |
| Frequency of Measurements: | | |
| Body Weight - | Weekly | Weekly |
| Hematology - | At end | At end |
| Biochemistry - | NR* | At end |
| Ophthalmological Exam - | NR | Before & at end |
| Pathology Examinations: | | |
| Gross Necropsy - | All animals; weigh 4 major organs | All animals; weigh 4 major organs |
| Tissue Preservation - | 5 major organs, gross lesions | All major tissues & gross lesions |
| | | Target organs and gross lesions |
| | | Lungs of all |

Limit Test: Oral & Dermal - 1000 mg/kg; none for inhalation

*Not Required

## Table 7. Teratogenicity Test

| | |
|---|---|
| Species: | Rat, mouse, hamster and rabbit (Rat and rabbit preferred) |
| Number of Animals: | At least 20 pregnant rats, mice or hamsters or 12 pregnant rabbits |
| Number of Dose Levels: | At least 3<br>HIGH DOSE - some maternal toxicity but no more than 10% maternal deaths<br>LOW DOSE - no observable effects |
| Exposure Period: | Period of major organogenesis:<br>rat/mouse - 6-15 days of pregnancy<br>hamster - 6-14 days of pregnancy<br>rabbit - 6-18 days of pregnancy<br>Alternate Method: exposure until 1 day before expected delivery |
| Clinical Examinations: | Daily clinical examinations<br>Food consumption/body weights weekly |
| Pathology Examinations: | Shortly before expected delivery - sacrifice; hyserectomy; examine and weigh fetuses<br>Prepare and examine 1/3-1/2 of fetuses for skeletal anomalies; remainder for soft-tissue anomalies |

## Table 8. Chronic Toxicity Test

Species: Rodent (rat preferred) & Non-rodent (dog preferred)

Number of Animals (sex/dose): 20 - Rodent; 4 - Non-rodent

Number of Dose Levels: 3

Duration of Exposure/Observation Period: 12 months

Frequency of Measurements:

| | |
|---|---|
| Body Weight - | Weekly - 1st 13 weeks; then monthly |
| Hematology - | At 3 & 6 months & every 6 months thereafter on 10/sex/dose |
| Biochemistry - | 6 months & at end on 10/sex/dose |
| Urinalysis - | At 3 & 6 months & every 6 months thereafter on 10/sex/dose |

Pathology Examinations:

| | |
|---|---|
| Gross Necropsy - | All animals; weigh 4 major organs |
| Tissue Preservation - | All major tissues and gross lesions |
| Microscopic Exam - | Preserve tissue of high dose & controls plus all animals that die or are killed during study<br>Target organs and lesions<br>Lungs of all |

## Table 9. Carcinogenicity Study

**Species:** Two species - rats and mice preferred

**Number of Animals (per sex/dose):** 50

**Number of Dose Levels:** 3

**Duration Exposure/ Observations:**
Minimum - 18 months for mice & hamsters;
24 months for rats
6 months longer for certain strains
Termination Accepted - when low dose or control survival = 25% (on sex basis)

**Clinical Examinations:**

| | |
|---|---|
| Body Weight: | Weekly 1st 13 weeks; 3 months thereafter |
| Food Consumption: | Weekly 1st 13 weeks; monthly thereafter |
| Hematology: | Differential counts on high dose & controls; other doses if needed |

**Pathology Examination:**

| | |
|---|---|
| Gross Necropsy: | All animals. No organ weights required |
| Tissue Preservation: | All major tissues & gross lesions; blood on all animals |
| Microscopic Exam: | Preserved tissues of:<br>(a) animals that die or are killed<br>(b) lesions suspected of being tumors<br>(c) high dose & controls<br>(d) lower doses if high dose has poor survival<br>(e) target organs of other doses |

# 1982 Hazardous Material Spills Conference

Sponsored by: Bureau of Explosives
United States Coast Guard
Chemical Manufacturers Association
United States Environmental Protection Agency

Milwaukee Exposition & Convention Center
Milwaukee, Wisconsin
April 19-22, 1982

Suite 700, 1629 K Street, N.W.
Washington, D.C. 20006
202/296-8246

January 26, 1982

PRESS RELEASE

CONTACT: LT. (jg) MIKE MABUNAY
U.S. COAST GUARD
G-WER
WASHINGTON, D.C. 20593
202/426-9568

## 1982 HAZARDOUS MATERIAL SPILLS CONFERENCE

On April 19-22, the 1982 Hazardous Material Spills Conference will be held in the Milwaukee Exposition and Convention Center, Milwaukee, Wisconsin. This year's conference is sponsored by the Bureau of Explosives of the Association of American Railroads (AAR), the Chemical Manufacturers Association (CMA), the United States Coast Guard, and the United States Environmental Protection Agency (EPA).

Approximately 100 technical papers will be given on subjects including: emergency response capabilities and techniques; methods of assessing the degree of hazard of chemical spills; monitoring and detecting hazardous materials; spill prevention; training and mitigation.

The conference will also feature exhibits on the latest advances in equipment and services.

Superfund legislation and perspectives will be discussed by high ranking officials of the EPA, the CMA, state governments and the AAR during the plenary session, the morning of April 20.

Conference registrations received by April 1, 1982 are $115. Thereafter, registration is $165. All housing is being handled by the Greater Milwaukee Convention and Visitors Bureau. All requests for additional information should be sent to:

Hazardous Material Spills Conference
Suite 700
1629 K Street, N.W.
Washington, D.C. 20006

**Affiliated Members**

- American Institute of Chemical Engineers
- American Petroleum Institute
- American Railway Engineering Association
- American Waterways Operators
- Federal Emergency Management Agency
- Hazardous Materials Advisory Council
- International Association of Fire Chiefs
- Materials Transportation Bureau
- National Tank Truck Carriers
- Spill Control Association of America

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

## JOURNAL LITERATURE

Tong, C. et al The use of adult rat liver cultures in the detection of the genotoxicity of various polycyclic aromatic hydrocarbons. *Environ Mutagen 3*, 477-87, 1981.

> Two tests which are both short term and *in vitro* are available using adult rat liver cultures. Both tests are able to show an intrinsic ability for xenobiotic

biotransformation. Therefore both tests can be used to detect genotoxicity of a variety of polycyclic aromatic compounds which are also carcinogenic. These tests are useful in providing supporting data for that obtained from studies of the effects of the compounds on subcellular metabolism.

Peel, H.W. and Perrigo, B.J. Application of the microcomputer to analytical toxicology. *J Forensic Sci 26*, 362-7, 1981.

This paper on technique of using the microcomputer is worth noting for its suggestions of programming short cuts.

Campbell, R.L. and Bruce, R.D. Comparative dermatotoxicology. Direct comparison of rabbit and human primary skin irritation responses to isopropylmyristate. *Toxicol Appl Pharmacol 59*, 555-63, 1981.

Thompson, E.D. and Hiles, R.A. A method for determining the maximum tolerated dose for *in vivo* cytogenetic analysis. *Food Cosmet Toxicol 19*, 347-51, 1981.

Sin A.K. et al. Effect of hypolipidemic drugs on hepatomegaly and micro-bodies in the rat. A new approach to the nature of hepatic peroxisomal proliferation. *Arzneimittelforsch 31*, 1119-26, 1981.

This paper is of importance because it discusses hepatic changes due to drugs in terms of pharmacological and toxicological criteria as related to hepatic toxic responses to drugs.

Osborne, D. and Effmann, E. Disturbances of trabecular architecture in the upper end of the femur in childhood. *Skeletal Radiol, 6*, 165-73, 1981.

> Data presented in this paper show that the trabecular architecture is an important source of information about effects of toxic substances in childhood.

---

---

## GOVERNMENT REPORTS

The following items are taken from government reports as shown in the TOXLINE database.

McCauley, P.T. and Bull, R.J. Experimental approaches to evaluating the role of environmental factors in the development of cardiovascular disease. *Govt Reports Announcements & Index (GRA&I)*, Issue 21, 1981.

> For cardiovascular toxicity studies in the laboratory, effects must be studied in the myocardium, the vasculature, and the kidney. In order to take into account the effects of the neuroendocrine system, a further breakdown may be necessary. The authors assume that the effects of toxicants in the environment are essentially chronic in nature and that studies should focus on chronic effects. They point out that a wide range of tests, both *in vivo* and *in vitro*, may be necessary to obtain data that can be extrapolated to man. Also they note that if genetically susceptible or stressed animals are used, their physiological characteristics must be understood.

Arthur, J.U. Review of freshwater bioassay procedures for selected amphipods. *Govt Reports Announcements & Index (GRA&I)*, Issue 21, 1981.

> This report reviews the methods previously used for gammarid bioassays and the life-cycle requirements. Although the data discussed deals largely with amphipod materials from tests on amphipods, data on other fresh water crustaceans are also considered. Short term

test factors discussed were survival rate, acclimation period, test chamber size, and age of the amphipods. For long term tests, survival rate, isolation of gravid females, sex ratios during reproductive testing, and test duration were considered. The utility of flow-through methods was also emphasized.

Infante, P.F. and Legator, M.S. Proceedings of workshop on methodology for assessing reproductive hazards in the workplace, April 19-22, 1978. *Govt Reports Announcements & Index (GRA&I)*, Issue 23, 1981.

Research topics discussed included case studies, test procedures both *in vitro* and *in vivo* for mutagens or teratogens, cytogenic and sperm analysis for exposed workers as well as epidemiological techniques for determining teratogens. Recommendations relating to such studies are included as well as names and addresses of study participants.

Shooter, D., and Anderson, R.C. Research and development for health and environmental hazard assessment. *Govt Reports Announcements & Index (GRA&I)*, Issue 21, 1981.

This research project deals with the problem of water quality for non-potable reuse. Two groups of water quality criteria must be considered. One is the determination of the daily allowable dose of a given contaminant which will produce no adverse effects on health. The other is the estimation of the minimum concentration in the water which would allow the subject to assimilate no more than the daily allowable dose.

---

## RESEARCH-IN-PROGRESS

The following citations are taken from the reports of research in progress as appearing in TOXICOLOGY RESEARCH PROJECTS DIRECTORY, a component of the TOXLINE database from which complete descriptions and additional information are available.

Eaton, J.G. Hazard evaluation. *Toxicology Research Projects Directory*, Vol 07, Issue 01, 1981.

> This project is expected to evaluate the toxicity of pesticide compounds to aquatic life both vertebrate and invertebrate. Flowing-water bioassays will be used with known concentrations of the toxic substances. State of the art test procedures will be used throughout.

Santi, L. et al. Chemical carcinogens studies-transplacental carcinogens and applications of short-term tests to environmental pollutants. *Toxicology Research Projects Directory*, Vol 07, Issue 01, 1981.

> This research project has a three-fold aim. The first is the study of the possibility that compounds given to the pregnant mouse may cause tumor development in the young as they age. The second is to study the "toxicity and onconogenic potency of compounds intermediate in chemical processes or utilized in the industrial environment". The third approach is to find a change in the blood of smokers as compared with non-smokers which will permit the early identification and warning of smokers. The change under investigation at present is the increase in SCE in smokers.

Russell, W.L. Mammalian chemical mutagenesis. *Toxicology Research Projects Directory*, Vol 07, Issue 01, 1981

> This comprehensive mouse mutagenesis program is planned to study the genetic effects of compounds from non-nuclear energy production, mainly coal. Three main types of test are used: 1) tests for transmitted chromosomal aberrations and for transmitted gene mutations; 2) dominant lethal test as well as the tests for heritable translocations and the X-chromosome-loss test as developed by this project; and 3) tests to assist in the evaluation of the mutagenesis work. These latter tests include toxicity tests, fate and metabolism, reproductive tests, etc.

Colwell, R.R. and Baya, A.M. Effect of toxic chemicals on human pathogens in the aquatic environment. *Toxicology Research Projects Directory*, Vol 07, Issue 01, 1981.

This study is expected to develop methods of predicting the effects of toxic materials in an aquatic environment upon human pathogens and to describe the fundamental basis of action of such chemicals. Very little information applicable to this question is now available.

Keeler, R.F. Teratogenic and poison plant compounds from poison plants. *Toxicology Research Projects Directory*, Vol 07, Issue 01, 1981.

Teratogenic and toxic compounds will be extracted from Verarum, Lupinus, Conium, Nocotaina and phylogenetically related species. These plants are all of interest in livestock grazing.

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10241-F
and/or
Control No: NCI No. C56326

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Acetaldehyde

INVESTIGATOR(S):
For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address,
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The acetaldehyde study has been placed in the deferred testing category because of recently completed inhalation and intratracheal studies in hamsters at Central Institute for Nutrition and Food in The Netherlands.

CAS Registry No.
Acetaldehyde 75-07-0

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

O'Shea KS ; Kaufman MH
Effect of acetaldehyde on the neuroepithelium of early mouse embryos.
J Anat; VOL 132, ISS Pt 1, 1981, P107-18

Dreosti IE ; Ballard FJ ; Belling GB ; Record IR ; Manuel SJ
Hetzel BS
The effect of ethanol and acetaldehyde on DNA synthesis in growing cells and on fetal development in the rat.
Alcoholism (NY); VOL 5, ISS 3, 1981, P357-62

Kawamoto K
Effect of alcohol and its metabolities on the hatching process of chicken eggs
Nichidai Igaku Zasshi; VOL 40, ISS 3, 1981,249-59

Prasanna CV ; Ramakrishnan S ; Krishnan B ; Rao AS
Effect of acetaldehyde on lung surfactant
Indian J. Exp. Biol.; VOL 19, ISS 6, 1981,580-1

Lieber CS ; Baraona E ; Korsten M ; Matsuda Y ; Seitz H
EFFECT OF ETHANOL AND MALNUTRITION ON THE LIVER AND GASTROINTESTINAL TRACT
Toxicology Research Projects Directory, Vol.04 iss.11 1979

Wolf J
PATHOLOGIC & TOXIC EFFECTS OF ALCOHOL
Toxicology Research Projects Directory, Vol.04 iss.07 1979

Lumeng L
ACETALDEHYDE AS THE MEDIATOR OF ETHANOL TOXICITY
Toxicology Research Projects Directory, Vol.07 iss.01 1981

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NTP No. 10212-K
and/or
Control No: NCI No. C02551

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Cadmium Oxide

INVESTIGATOR(S):

For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The cadmium oxide study has been placed in the deferred testing category because carcinogenesis studies are in progress or have been published.

CAS Registry No.
Cadmium oxide 1306-19-0

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

PITOT HC
RELATIONSHIPS OF BIOASSAY DATA ON CHEMICALS TO THEIR TOXIC AND
CARCINOGENIC RISK FOR HUMANS
SYMPOSIUM ON DETERMINANTS OF CANCER RELEVANT TO PREVENTION IN THE
WAR ON CANCER. J ENVIRON PATHOL TOXICOL: 3 (4) 1980 431-450

INT AGENCY RES CANCER
WHO INTERNATIONAL AGENCY FOR RESEARCH ON CANCER MONOGRAPHS ON THE
EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS VOL.
1-20 SUPPLEMENT 1. CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED
WITH CANCER IN HUMANS LYON FRANCE JAN. 15-17 1979
WHO. IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER)
MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF
CHEMICALS TO HUMANS, VOLS. 1-20, SUPPL. 1. CHEMICALS AND
INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS; LYON,
FRANCE, JAN. 15-17, 1979. XI+71P. WHO: GENEVA, SWITZERLAND.

Oberdoerster G ; Hochrainer D
Generation of cadmium aerosols and their effects after inhalation
Aerosole Naturwiss., Med. Tech., [Jahrestag. Ges.
Aerosolforsch.], 6th; 1979,230-5

Hadley JG ; Conklin AW ; Sanders CL
Systemic toxicity of inhaled cadmium oxide
Toxicol. Lett.; VOL 4, ISS 2, 1979,107-11

Kazantzis G
Renal tubular dysfunction and abnormalities of calcium metabolism
in cadmium workers
EHP, Environ. Health Perspect.; VOL 28,, 1979,155-9

HADLEY JG ; SANDERS CL ; CONKLIN AW
Rapid solubilization and translocation of cadmium-109 oxide
following pulmonary deposition.
TOXICOL APPL PHARMACOL; 54 (1). 1980. 156-160.

Frazier JM ; Mitzner WA
KINETICS AND TOXICOLOGY OF CADMIUM
Toxicology Research Projects Directory, Vol.06 iss.01 1981

Weischer CH ; Greve J
[Effects of zinc-aerosols on the inhalation toxicity of cadmium
(author's transl)]
Zentralbl Bakteriol [B]; VOL 168, ISS 3-4, 1979, P266-72

Reutovich LN ; Filippov IP ; Rzhepnitskii II ; Tarat EY
Industrial testing of the apparatus MSTs-II in dust removal
system of cadmium oxide production
Khim. Prom-st., Ser.: Fosfornaya Prom-st.; ISS 4, 1979,24-7

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10223-X
and/or
Control No: NCI No. C02711

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Cadmium Sulfide

INVESTIGATOR(S):
For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate desicions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The cadmium sulfide study has been placed in the deferred testing category because carcinogenesis studies are in progress or have been published.

CAS Registry No.
Cadmium sulfide 1306-23-6

TOX-TIPS JANUARY 1981 68-23

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

INT AGENCY RES CANCER
WHO INTERNATIONAL AGENCY FOR RESEARCH ON CANCER MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS VOL. 1-20 SUPPLEMENT 1. CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS LYON FRANCE JAN. 15-17 1979
WHO. IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER) MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS, VOLS. 1-20, SUPPL. 1. CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS; LYON, FRANCE, JAN. 15-17, 1979. XI+71P. WHO: GENEVA, SWITZERLAND. PAPER. ISBN 92-832-1402-1.; 0 (0). 1979 (RECD. 1980). XI+71P.

Nezel K ; Matthes S ; Vogt H
Various cadmium compounds in the feed for broilers and laying hens
Arch. Gefluegelkd.; VOL 45, ISS 3, 1981,120-5

Madill HD ; Norman JJ
An evaluation of the toxic hazard associated with the use of a fluorescent particle atmosphere tracer in an urban area
Report; ISS DCIEM-80-C-54; Order No. AD-A094 183,, 1980,16 pp.

BOENIGER M ; BRIGGS T
POTENTIAL HEALTH HAZARDS IN THE MANUFACTURE OF PHOTO VOLTAIC SOLAR CELLS
ROM, W. N. AND V. E. ARCHER (ED.). HEALTH IMPLICATIONS OF NEW ENERGY TECHNOLOGIES. XXI+785P. ANN ARBOR SCIENCE PUBLISHERS, INC.: ANN ARBOR, MICH., USA. ILLUS. ISBN 0-250-40361-7.; 0 (0). 1980. P593-606.

ANONYMOUS
REBUTTABLE PRESUMPTION AGAINST REGISTRATION AND CONTINUED REGISTRATION OF THE PESTICIDE PRODUCTS CONTAINING CADMIUM
FED REGIST; 42:56574-56586,1977

FRIBERG L ; PISCATOR M ; NORDBERG GF ; KJELLSTROEM T
CARCINOGENIC AND GENETIC EFFECTS, IN: 'CADMIUM IN THE ENVIRONMENT'
CRC PRESS,CLEVELAND,OHIO:PP 131-135,1974

SHIRAISHI Y ; KURAHASHI H ; YOSIDA TH
CHROMOSOMAL ABERRATIONS IN CULTURED HUMAN LEUKOCYTES INDUCED BY CADMIUM SULFIDE
PROC JPN ACAD; 48:133-137,1972

Vinikour WS ; Goldstein RM ; Anderson RV
Bioconcentration patterns of zinc, copper, cadmium and lead in selected fish species from the Fox River, Illinois
Bull. Environ. Contam. Toxicol.; VOL 24, ISS 5, 1980,727-34

Koshi K
Solubility and cell toxicity of cadmium
Ind. Health; VOL 17, ISS 3, 1979,187-98

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NTP No. 10287-K
and/or
Control No: NCI No. C61109

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of C.I. Direct Blue 1

INVESTIGATOR(S):

For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Plans to test C.I. Direct Blue 1 in the NTP Carcinogenesis Testing Program have been dropped. C.I. Direct Blue 15, paired with 3,3'-dimethoxybenzidine has been substituted. (See TOX-TIPS JANUARY 1982 68-27.)

CAS Registry No.

| | |
|---|---|
| C.I. Direct Blue 1 | 2610-05-1 |
| C.I. Direct Blue 15 | 2429-74-5 |
| 3,3'-Dimethoxybenzidine | 119-90-4 |

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

LYNN RK ; DONIELSON DW ; ILIAS AM ; KENNISH JM ; WONG K
MATTHEWS HB
Metabolism of bisazobiphenyl dyes derived from benzidine, 3,3'-dimethylbenzidine or 3,3'-dimethoxybenzidine to carcinogenic aromatic amines in the dog and rat.
TOXICOL APPL PHARMACOL; 56 (2). 1980. 248-258.

GENIN VA
Formation of blastomogenic diphenyl aminoderivatives due to metabolism of direct azo dye.
VOPR ONKOL (LENINGR); 23 (9). 1977 (RECD 1978) 50-52

BEAUDOIN AR
SERUM PROTEINS AND DISAZO DYE TERATOGENESIS
TERATOLOGY; 2:85-90,1969

AMELS D ; CHECIU M ; SANDOR S
CONTRIBUTIONS TO THE STUDY OF BISAZO DYES-INDUCED EYE ANOMALIES IN RATS
REV ROUM MORPHOL EMBRYOL PHYSIOL:MORPHOL EMBRYOL; 23:93-101,1977

BEAUDOIN AR ; PICKERING MJ
TERATOGENIC ACTIVITY OF SEVERAL SYNTHETIC COMPOUNDS STRUCTURALLY RELATED TO TRYPAN BLUE
ANAT REC; 137:297-305,1960

WILSON JG
TERATOGENIC ACTIVITY OF SEVERAL AZO DYES CHEMICALLY RELATED TO TRYPAN BLUE
ANAT REC; 123:313-334,1955

BEAUDOIN AR
TERATOGENIC ACTIVITY OF SIX DISAZO DYES IN THE WISTAR ALBINO RAT
PROC SOC EXP BIOL MED; 127:215-219,1968

JENSH RP ; BRENT RL
EFFECT OF TRYPAN BLUE ON RAT EMBRYO DEVELOPMENT AFTER THE PERIOD OF ORGANOGENESIS
TERATOLOGY; 5:258,1972

WILSON JG
CONGENITAL MALFORMATIONS IN THE OFFSPRING OF RATS TREATED DURING PREGNANCY WITH AZO DYES
ANAT REC; 118:369,1954

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10701-A
and/or
Control No: NCI No. C61290

PROJECT TITLE:
Carcinogenesis Bioassay of C.I. Direct Blue 15

INVESTIGATOR(S):
Dr. J. Mennear

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Hazelton Laboratories
9200 Leesburg Turnpike
Vienna, VA 22180

PERIOD FOR THIS NRP:
Start Date: SEPTEMBER 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, C.I. Direct Blue 15 will be administered to rats via the drinking water.

CAS Registry No.
C.I. Direct Blue 15 2429-74-5

TOX-TIPS JANARY 1982 68-27

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

LYNN RK ; DONIELSON DW ; ILIAS AM ; KENNISH JM ; WONG K
MATTHEWS HB
Metabolism of bisazobiphenyl dyes derived from benzidine,
3,3'-dimethylbenzidine or 3,3'-dimethoxybenzidine to carcinogenic
aromatic amines in the dog and rat.
TOXICOL APPL PHARMACOL; 56 (2). 1980. 248-258.

Sugimura T ; Nagao M ; Kawachi T ; Honda M ; Yahagi T ; Seino Y
Sato S ; Matsukura N ; Matsushima T ; et al
Mutagen-carcinogens in food, with special reference to highly
mutagenic pyrolytic products in broiled foods
Cold Spring Harbor Conf. Cell Proliferation; VOL 4, ISS Origins
Hum. Cancer, Book C, 1977,1561-77

BEAUDOIN AR
EFFECT OF SEVERAL AZO DYES ON THE DEVELOPING CHICK EMBRYO
ANAT REC; 130:269-270,1958

WILSON JG
CONGENITAL MALFORMATIONS IN THE OFFSPRING OF RATS TREATED DURING
PREGNANCY WITH AZO DYES
ANAT REC; 118:369,1954

BECK F ; LLOYD JB
TERATOGENIC EFFECTS OF AZO DYES
ADV TERATOL; 1:131-193,1966

BEAUDOIN AR
TERATOGENIC ACTIVITY OF SEVERAL CLOSELY RELATED DISAZO DYES ON
THE DEVELOPING CHICK EMBRYO
J EMBRYOL EXP MORPHOL; 9:14-21,1961

LLOYD JB ; BECK F ; GRIFFITHS A
STRUCTURE-ACTIVITY STUDIES FOR THE TERATOGENIC EFFECTS OF DISAZO
DYES
J PHARM PHARMACOL; 17:126S-128S,1965

BEAUDOIN AR ; PICKERING MJ
TERATOGENIC ACTIVITY OF SEVERAL SYNTHETIC COMPOUNDS STRUCTURALLY
RELATED TO TRYPAN BLUE
ANAT REC; 137:297-305,1960

WILSON JG
TERATOGENIC ACTIVITY OF SEVERAL AZO DYES CHEMICALLY RELATED TO
TRYPAN BLUE
ANAT REC; 123:313-334,1955

BEAUDOIN AR
TERATOGENIC ACTIVITY OF SIX DISAZO DYES IN THE WISTAR ALBINO RAT
PROC SOC EXP BIOL MED; 127:215-219,1968

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10158-K
and/or
Control No: NCI No. C60582

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Polyvinylpyrrolidine Polymers

INVESTIGATOR(S):
For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address,
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Plans to test polyvinylpyrrolidine polymers in the NTP Carcinogenesis Testing Program have been dropped. It has been decided that adequate toxicity testing data exists in the literature.

CAS Registry No.
1-Vinyl-2-pyrrolidinone
polymers 9003-39-8

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

INT AGENCY RES CANCER
INTERNATIONAL AGENCY FOR RESEARCH ON CANCER MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS VOL. 19. SOME MONOMERS PLASTICS AND SYNTHETIC ELASTOMERS AND ACROLEIN LYONS FRANCE FEB. 7-13 1978
INTERNATIONAL AGENCY FOR RESEARCH ON CANCER. IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER) MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS, VOL. 19. SOME MONOMERS, PLASTICS AND SYNTHETIC ELASTOMERS, AND ACROLEIN, LYONS, FRANCE, FEB. 7-13, 1978. 513P. WHO: GENEVA, SWITZERLAND. ILLUS. PAPER. ISBN 92-832-1219-3.; 0 (0). 1979. 513P.

ROSENKRANZ PG ; GORDON DR ; SPECK WT ; ROSENKRANZ HS
DEVELOPMENTAL ABNORMALITIES IN THE AMERICAN SEA URCHIN INDUCED BY POVIDONE-IODINE, A WIDELY USED VAGINAL ANTISEPTIC
MUTAT RES; 77:387-390,1980

Sultana N ; Arayne MS ; Saify ZS
PVP: in gastroenterology.
JPMA; VOL 29, ISS 1, 1979, P12-7

Popov D ; Iliev I ; Georgieva M ; Kabaivanov V
Investigating the antitumoral action of complexes of poly(vinylpyrrolidinone) with diethyleneiminebenzoquinone and certain nucleosides and their bases
Dokl. Bolg. Akad. Nauk; VOL 30, ISS 7, 1977,1075-8

Crompton DO
Dangerous betadine dispensing [letter]
Med J Aust; VOL 2, ISS 4, 1980, P226

Vorherr H ; Vorherr UF ; Mehta P ; Ulrich JA ; Messer RH
Vaginal absorption of povidone-iodine.
JAMA; VOL 244, ISS 23, 1980, P2628-9

Harrison LH
Comparison of a microbicidal povidone-iodine gel and a placebo gel as catheter lubricants.
J Urol; VOL 124, ISS 3, 1980, P347-9

Fraser I
Hazards of surgical glove powders [letter]
Br Med J; VOL 281, ISS 6247, 1980, P1072

Willams LR Jr ; Rietschel RL
Iododerma complicating cardiovascular surgery.
South Med J; VOL 73, ISS 7, 1980, P937-9

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10239-E
and/or
Control No: NCI No. C61176

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Sodium Arsanilate

INVESTIGATOR(S):

For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP: –

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals has been reported in the August 1981 issue of the NTP Technical Bulletin.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Plans to test sodium arsanilate in the NTP Carcinogenesis Testing Program have been dropped. The compound is structurally related to Roxarsone, which is already being tested. (See TOX-TIPS APRIL 1981 59-9)

CAS Registry No.
Sodium arsanilate 127-85-5

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

FROST DV ; MAIN BT ; COLE J ; SANDERS PG ; PERDUE HS
REPRODUCTION STUDIES IN RATS WITH ARSANILIC ACID
FED PROC FED AM SOC EXP BIOL; 23:291,1964

Arnold W ; Morgenstern C ; Thorn L ; Schinko I
Morphological and functional changes in the inner ear after
poisoning with ethacrynic acid and Atoxyl
Arch. Oto-Rhino-Laryngol.; VOL 218, ISS 3-4, 1978,179-90

ANNIKO M ; LJUNGQVIST A
The nephrotoxic effect of the ototoxic compound atoxyl.
ACTA PATHOL MICROBIOL SCAND SECT A PATHOL; 85 (5). 1977 751-760

Anniko M ; Wersall J
Early transient and permanent changes of the inner ear. A
comparative study of ethacrynic acid and atoxyl
Colloq. Inst. Natl. Sante Rech. Med.; VOL 68, ISS Inn. Ear Biol.,
1977,405-19

Thelestam M ; Anniko M ; Mollby R
Cytopathogenic effects of atoxyl, an ototoxic compound, on human
diploid fibroblasts in vitro
Chem.-Biol. Interact.; VOL 19, ISS 1, 1977,47-60

Anniko M ; Plantin LO
Delayed elimination of the ototoxic compound atoxyl from the
inner ear
Arch. Oto-Rhino-Laryngol.; VOL 215, ISS 1, 1977,81-9

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No:** NTP No. 10303-W
**and/or**
**Control No:** NCI No. C61187

**PROJECT TITLE:**

Tests for Toxicologic and Carcinogenic Effects: Status of 2,4,5-Trichlorophenol

**INVESTIGATOR(S):**

For further information, contact
Technical Information Section

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

**Name and Address. Including Zip Code.**

**PERIOD FOR THIS NRP:**

**Start Date:**

**End Date:**

**Annual Funding:**

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

2,4,5-Trichlorophenol has been deleted from study plans. The compound is no longer produced and a major contaminant is a known carcinogen.

CAS Registry No.
2,4,5-Trichlorophenol 95-95-4

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Honchar PA ; Halperin WE
2,4,5-T, trichlorophenol, and soft tissue sarcoma.
Lancet 1(8214): 268-269 1981 (7 References)

Hardell L ; Eriksson M
Soft-tissue sarcomas, phenoxy herbicides, and chlorinated phenols [letter]
Lancet; VOL 2, ISS 8240, 1981, P250

KIMBROUGH RD
THE CARCINOGENIC AND OTHER CHRONIC EFFECTS OF PERSISTENT HALOGENATED ORGANIC COMPOUNDS
NICHOLSON, W. J. AND J. A. MOORE (ED.). ANNALS OF THE NEW YORK ACADEMY OF SCIENCES, VOL. 320. HEALTH EFFECTS OF HALOGENATED AROMATIC HYDROCARBONS; INTERNATIONAL SYMPOSIUM, NEW YORK, N.Y., USA, JUNE 24-27, 1978. X+730P. NEW YORK ACADEMY OF SCIENCES: NEW YORK, N.Y., USA. ILLUS. MAPS. PAPER. ISBN 0-89766-008-0.; 0 (0). 1979 (RECD. 1980). P415-418.

2,4,5- and 2,4,6-trichlorophenols.
IARC Monogr Eval Carcinog Risk Chem Hum; VOL 20, 1979, P349-67

Ott MG ; Holder BB ; Olson RD
A mortality analysis of employees engaged in the manufacture of 2,4,5-trichlorophenoxyacetic acid
JOM, J. Occup. Med.; VOL 22, ISS 1, 1980,47-50

ZACK JA ; SUSKIND RR
The mortality experience of workers exposed to tetrachlorodibenzodioxin in a trichlorophenol process accident.
J OCCUP MED; 22 (1). 1980. 11-14.

Halperin W ; Lemen R
REGISTRATION OF DIOXIN WORKERS
Toxicology Research Projects Directory, Vol.05 iss.08 1980
Epidemiology Research Projects Directory, 1980

Hay A
US producers fear ban on 2,4,5-trichlorophenol [news]
Nature; VOL 275, ISS 5680, 1978, P471

Kozak VP ; Simsiman GV ; Chesters GY ; Stensby D ; Harkin K
Reviews of the environmental effects of pollutants: XI. Chlorophenols.
US EPA Rep. EPA-600/1-79-012: 519 pp. 1979 (248 References)

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
Contract No: NTP No. 10180-D
and/or
Control No: NCI No. C60208

**PROJECT TITLE:**

Tests for Toxicologic and Carcinogenic Effects: Status of Vinylidene Fluoride

**INVESTIGATOR(S):**

For further information, contact
Technical Information Section

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

Name and Address.
Including Zip Code.

**PERIOD FOR THIS NRP:** –

Start Date:

End Date:

Annual Funding:

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two-year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Vinylidene fluoride has been nominated to NTP for testing. The project has been delayed pending results from an industry-sponsored rat study.

CAS Registry No.
Vinylidene fluoride 75-38-7

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

STOCKLE G ; LAIB RJ ; FILSER JG ; BOLT HM
Vinylidene fluoride: Metabolism and induction of pre-neoplastic hepatic foci in relation to vinyl chloride.
TOXICOL LETT (AMST); 3 (6). 1979. 337-342.

Bolt HM ; Filser JG ; Wiegand M ; Buchter A ; Bolt W
Studies on liver microsomal metabolism and interaction of vinyl chloride and related compounds in relation to possible carcinogenicity
Proc. Int. Congr. Occup. Health, 19th; VOL 1, ISS Chem. Hazards, 1980,369-77

Maltoni C ; Tovoli D
First experimental evidence of the carcinogenic effects of vinylidene fluoride; long-term bioassays on Sprague-Dawley rats by oral administration.
Med Lav; VOL 70, ISS 5, 1979, P363-8

Bolt HM ; Laib RJ ; Filser JG ; Ottenwaelder H ; Stoeckle G
Buchter A ; Bolt W
Toxicological problems with brominated and fluorinated vinyl chloride analog monomers
Krebsgefaehrdung Arbeitsplatz/Arbeitsmed. Kolloq., Ber. Jahrestag. Dtsch. Ges. Arbeitsmed., 19th; 1979,195-203

Filser JG ; Bolt HM
Pharmacokinetics of halogenated ethylenes in rats
Arch. Toxicol.; VOL 42, ISS 2, 1979,123-36

Stoeckle G ; Laib RJ ; Filser JG ; Bolt HM
Vinylidene fluoride: metabolism and induction of preneoplastic hepatic foci in relation to vinyl chloride
Toxicol. Lett.; VOL 3, ISS 6, 1979,337-42

Bartsch H ; Malaveille C ; Barbin A ; Planche G
Mutagenic and alkylating metabolites of halo-ethylenes, chlorobutadienes and dichlorobutenes produced by rodent or human liver tissues. Evidence for oxirane formation by P450-linked microsomal mono-oxygenases
Arch. Toxicol.; VOL 41, ISS 4, 1979,249-77

BARTSCH H ; MALAVEILLE C ; CAMUS A-M ; MARTEL-PLANCHE G ; BRUN G
HAUTEFEUILLE A ; SABADIE N ; BARBIN A ; KUROKI T ; DREVON C
PICCOLI C ; MONTESANO R
VALIDATION AND COMPARATIVE STUDIES ON 180 CHEMICALS WITH S.TYPHIMURIUM STRAINS AND V79 CHINESE HAMSTER CELLS IN THE PRESENCE OF VARIOUS METABOLIZING SYSTEMS
MUTAT RES; 76:1-50,1980

Bales RE
Fluorocarbons. An industrial hygiene survey of worker exposure in four facilities
DHEW (NIOSH) Publ. (U. S.); ISS 79-101,, 1978,49 pp.

## Supporting and Performing Organizations

American Petroleum Products
  *Coate, W....67:7
  *Furst, A....67:25
  *Hepler, D. I....67:9, 67:15
  *Jagannath,...67:13
  *Schroeder, R.E....67:11
  *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  *Weaver, N.K....55:27
  Sponsored studies...67:23
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5
Biodynamics...67:11
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S. 60:5, 60:9, 60:11
  Yang, C.S....60:7
  Zelenak, J.P....60:9
  Sponsored studies...60:5
Central Institute for Nutrition & Food...68:19
Chemistry Industry Institute of Technology
  *Gralla, E....55:3, 55:5
  *Stack, C.R....55:27, 55:29, 55:31, 55:33
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3
Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27
  Coate, W. B....55:25

*Project Officer/Compound Manager

Inhalation Toxicology Research Institute
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp...57:3, 57:5,
  57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19,
  60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11,
  63:11, 65:21, 67:13
Lovelace Biomedical and Environmental
 Research Institute
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9
  Snipes, M. B....56:9
Mason Research Institute...56:17, 56:29, 56:33, 57:17,
  57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19,
  63:9, 63:13, 64:5 64:19, 64:25, 64:33
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27,
  60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
National Cancer Institute
  Blair, A....62:11
 *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
 *Sestito, J....62:13
 *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7,
  64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
National Institute of Environmental
  Health Sciences
  Sponsored studies...55:21, 55:23, 58:3
National Institute for Occupational
 Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11
 *Brown, D....55:9
 *Boeniger, M....55:11
 *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
 *Cox, C....60:3
 *Donaldson, H....66:3
 *Elliott, L....56:3, 56:7
 *Herrick, B....60:3
 *Honchar, P....66:5
  Lewis, T. R....62:5
  Nelson, B.K....65:3

*Project Officer/Compound Manager

National Institute for Occupational Safety and Health (Cont.)
  *Reeve, G....66:7
  *Okun, A....66:11
  *Robinson, C....55:7
  *Rosenberg, M....66:9
  Stern, F. B....62:3
  *Taylor, P....55:13
  Wagner, W. D....62:9
  *Whalen, J....56:5
  *Whitmire, C....55:15
  Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
National Institutes of Health
  Sponsored studies...61:3
National Toxicology Program
  *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21
  *Birnbaum, L....59:9
  *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15
  *Creasia, D....65:5, 65:17, 65:23
  *Dean, J....60:17, 65:11
  *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
  *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
  *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7
  *Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29
  *Gupta, B....59:5
  *Hartwell, W....58:5, 59:19, 59:21, 60:21
  *Huff, J....63:15, 64:33
  *Irwin, R....59:29, 64:25, 65:13
  *Jackson, C....64:17
  *Jameson, C. W....55:17, 60:27, 63:3
  *Kluwe, W. M....57:5, 65:9
  *Lamb, J. C....57:29, 63:13
  *Matthews, H....59:11, 59:27, 65:21
  *McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
  *McCoy, J.L....60:19
  *Melnick, R....56:21, 59:17, 63:11
  *Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27
  *Padarathsingh, M....62:19
  *Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
  *Quest, J....67:27
  *Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
  *Van Stee, E....60:13
  *Ward, J.M....58:17, 58:19, 58:21, 61:11
  *Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17
  Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35

*Project Officer/Compound Manager

Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
  Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29
Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

# Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
75-07-0 Acetaldehyde...68:19
75-38-7 Vinylidene fluoride...68:35
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-93-3 Methyl ethyl ketone...55:3
79-11-8 Chloroacetic acid...57:19
79-06-1 Acrylamide...55:21, 55:23
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
83-79-4 Rotenone...59:21
87-62-7 2,6-Xylidine...56:29, 59:13
87-86-5 Pentachlorophenol...66:5
91-64-5 Coumarin...57:27
91-79-2 Thenyldiamine (Pharmaceutical)...64:9
91-80-5 Methapyrilene...64:15
91-81-6 Tripelenamine...64:7
91-84-9 Pyrilamine...64:11
92-48-8 6-Methylcoumarin...57:23
93-76-5 2,4,5-T...66:5
94-66-2 Diethyl phthalate...57:31
94-75-7 2,4-D...66:5
95-50-1 1,2-Dichlorobenzene...55:31
95-86-3 2,4-Diaminophenol...64:25
95-95-4 2,4,5-Trichlorophenol...68:33
96-09-3 Styrene oxide...65:17

| | |
|---|---|
| 98-85-1 | alpha-Methylbenzyl alcohol...61:23 |
| 100-02-7 | p-Nitrophenol...65:13 |
| 100-40-3 | 4-Vinylcyclohexene...57:9 |
| 100-42-5 | Styrene...55:27 |
| 100-44-7 | Benzyl chloride...65:5 |
| 101-90-6 | Diglycidyl resorcinol ether...63:9 |
| 101-77-9 | 4,4'-Methylenedianiline...63:13 |
| 103-90-2 | 4-Hydroxyacetanilide...57:25 |
| 104-55-2 | Cinnamaldehyde...64:27 |
| 106-46-7 | 1,4-Dichlorobenzene...55:33 |
| 106-47-8 | p-Chloroaniline...60:21 |
| 106-87-6 | 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25 |
| 107-02-8 | Acrolein...59:23 |
| 107-07-3 | Ethylene chlorohydrin...58:19 |
| 107-15-3 | Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17 |
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9 |
| 110-54-3 | Hexane...55:21 |
| 110-80-5 | 2-Ethoxyethanol...65:3, 66:9 |
| 111-15-9 | 2-Ethoxyethanol acetate...65:3 |
| 111-30-8 | Glutaraldehyde...57:15 |
| 111-76-2 | 2-Butoxyethanol...65:3, 66:9 |
| 111-90-0 | 2-(2-Ethoxyethoxy)ethanol...65:3 |
| 115-07-1 | Propylene...58:23 |
| 115-09-3 | Methylmercuric chloride...55:23 |
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27 |
| 120-40-1 | Lauric acid dietholamine (con 1/1);<br>(Bis(2-hydroxyethyl)lauramide)...61:21 |
| 121-19-7 | Roxarsone...59:19 |
| 121-79-9 | Propyl gallate...63:17 |
| 124-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 469-21-6 | Doxylamine...64:23 |
| 470-82-6 | 1,8-Cineole...64:29 |
| 509-14-8 | Tetranitromethane...55:15, 56:27 |
| 518-47-8 | C.I. Acid Yellow 73...58:11 |
| 542-56-3 | Isobutyl nitrite...64:17 |
| 542-75-6 | 1,3-Dichloropropene...63:7 |
| 542-78-9 | Malonaldehyde...58:17 |
| 555-30-6 | Methyldopa...67:29 |
| 569-61-9 | C.I. Basic Red 9, monohydrochloride...58:13 |

584-84-9 2,4-Toluene diisocyanate...59:7
598-55-0 Methyl carbonate...67:27
828-00-2 Dimethoxane...61:11
868-85-9 Dimethyl hydrogen phosphite...59:3
924-42-5 N-Methylolacrylamide...57:21
989-38-8 Rhodamine 6G...58:9
1271-19-8 Titanocene dichloride...60:31
1306-19-0 Cadmium oxide...68:21
1306-23-6 Cadmium sulfide...68:23
1309-37-1 Ferric oxide...62:5
1317-71-1 Olivine...62:7
1330-20-7 Xylene...62:11, 67:11
1338-23-4 2-Butanone, peroxide...62:15
1344-00-9 Sodium aluminosilicate...56:15
1854-26-8 Dimethyloldihydroxyethyleneurea...60:19
2058-46-0 Oxytetracycline hydrochloride...57:13
2385-85-5 Mirex...63:15
2425-85-6 C.I. Pigment Red 3...61:15
2429-74-5 C. I. Direct Blue 15...68:27
2429-74-5 C. I. Direct Blue 15...68:25
2475-45-8 C.I. Disperse Blue 1...65:25
2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5
5989-27-5 d-Limonene...60:27
6471-49-4 C.I. Pigment Red 23...61:13
7440-41-7 Beryllium...66:11
7487-94-7 Mercuric chloride...59:31
7631-86-9 Silica...62:7
7681-49-4 Sodium fluoride...56:19
7782-50-5 Chlorine...64:3
7783-81-5 Uranium-238 hexafluoride...55:9
9002-92-0 Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5
9003-39-8 1-Vinyl-2-pyrrolidinone polymers...68:29
9005-65-6 Polysorbate 80...60:15
10028-15-6 Ozone...59:25
10098-97-2 Strontium-90...56:9
12001-28-4 Crocidolite...63:27
12001-29-5 Chrosotile...63:25
12172-73-5 Amosite...63:23
12266-32-9 Plutonium-238 dioxide...61:7
12741-11-6 Zirconium silicate...62:7
13552-44-8 4,4'-Methylenedianiline dihydrochloride...63:13
13961-86-9 Oleic acid dietholamine salt...65:15
13968-56-4 Plutonium-239 tetranitrate...61:7
14047-09-7 3,3',4,4'-Tetrachloroazobenzene...58:3
14808-60-7 Quartz...62:5
14567-73-8 Tremolite...63:19
15117-96-1 Uranium-235...55:9
16127-62-1 Amosite...63:23
16561-29-8 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21
19086-72-7 Olivine...62:7

| | |
|---|---|
| 21232-47-3 | 3,3',4,4'-Tetrachloroazoxybenzene...58:3 |
| 21645-51-2 | Hydrated alumina (Aluminum hydroxide)...62:5 |
| 22840-34-2 | Plutonium-239 dioxide ..56:11, 61:7 |
| 26628-22-8 | Sodium azide...56:31 |
| 26677-58-7 | Plutonium-239 citrate...56:11 |
| 36355-01-8 | Hexabromobiphenyl...64:13 |
| 52551-67-4 | HC Yellow No. 4...64:5 |
| 53799-46-5 | Crocidolite...63:27 |
| 58425-86-8 | Aluminum silicate...62:7 |
| 61076-97-9 | Chrysotile...63:25 |
| 61105-31-5 | Crocidolite...63:27 |
| 64741-55-5 | Light catalytic cracked naphtha...67:3, 67:5 |
| 64741-56-6 | Vacuum residuum (petroleum)...67:21 |
| 64741-62-4 | Catalytic cracked clarified oil (petroleum)...67:23 |
| 64741-63-5 | Light catalytic reformed naphtha (petroleum)...66:25, 66:27 |
| 64741-87-3 | Sweetened naphtha (petroleum)...66:17, 66:19 |
| 64742-48-9 | Hydrotreated heavy naphtha (petroleum)...67:17, 67:19 |
| 64742-80-9 | Hydrodesulfurized middle distillate |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 |
| | (petroleum)...66:13, 66:15 |
| 64742-81-0 | Hydrodesulfurized kerosene (petroleum)...66:21, 66:23 |
| 68334-30-5 | Petroleum products, diesel oil...61:9 |
| 68476-34-6 | Fuels, diesel, no. 2...61:9 |

# INDEX OF COMPOUNDS

National Toxicology Program/National Cancer Institute Bioassay Reports may be ordered from the National Technical Information Service, Springfield, Virginia 22161, using the PB-number cited.

- Acetaldehyde
  - Hamster - inhalation - carcinogenicity...68:19
  - Hamster - intratracheal - carcinogenicity...68:19
- Cadmium oxide
  - Carcinogenicity...68:21
- Cadmium sulfide
  - Carcinogenicity...68:23
- C. I. Direct Blue 1
  - Carcinogenicity...68:25
- C. I. Direct Blue 15
  - Carcinogenicity...68:25
- 3,3'-Dimethoxybenzidine
  - Carcinogenicity...68:25
- C. I. Direct Blue 15
  - Rat - water - carcinogenicity...68:27
- 1-Vinyl-2-pyrrolidinone polymers
  - Carcinogenicity...68:29
- Sodium arsanilate
  - Carcinogenicity...68:31
- 2,4,5-Trichlorophenol
  - Carcinogenicity...68:33
- Vinylidene fluoride
  - Carcinogenicity...68:35

# TOXICOLOGY INFORMATION RESPONSE CENTER
# (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

**Contract No:**
**and/or**
**Control No:**

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

**Start Date:**

**End Date:**

**Annual Funding:**

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

## INSTRUCTIONS FOR FILLING IN THE FORM

### Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

### Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

### Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

### Performing Organization

Enter name of organization where work is actually being done.

### Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

### Project Summary

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

### Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

### Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

### Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

### Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division" or "toxicology branch."

### Performing Organization

Enter name of organization where work is actually being done.

### Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

### Project Summary

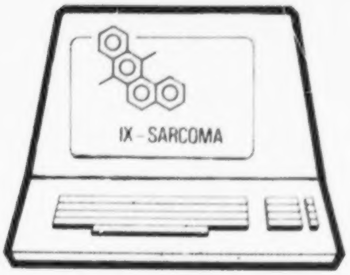
Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

### Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

*U.S. GOVERNMENT PRINTING OFFICE: 1982 361-756/502 1-3



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# TDB
TOXICOLOGY DATA BANK
# CONDENSED

Bethesda, Maryland 20209

**TDB DEFINED**

The Toxicology Data Bank (TDB) is an online, interactive file containing chemical, pharmacological, and toxicological data extracted from textbooks, handbooks, criteria documents, and monographs. The file is prepared at the National Library of Medicine (NLM) and made available through its online service, the Medical Literature Analysis and Retrieval System (MEDLARS). TDB contains data and information on about 2,500 substances, plus notices that more than 750 additional substances are in the process of data extraction. Thus, over 3000 substances are in the public TDB file. Data in TDB have been reviewed by a peer group of scientists.

Information in TDB is organized around each chemical substance with records composed of approximately 60 different data elements. The elements are grouped into eight categories which include chemical, physical, biological, pharmacological, toxicological, and environmental information.

**TDB ACCESSED**

TDB is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

**TDB SEARCHED**

TDB is primarily searched using free text terms. The human and animal/non-human toxicity excerpts have been indexed with TOXMeSH vocabulary. The user can search TDB for a particular chemical record by entering the TDB number, CAS Registry Number, or a chemical name. The user can also search TDB for information on a group of compounds, or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected information reported for a given substance.

**TDB AVAILABILITY**

TDB is available at NLM Monday, Wednesday, and Thursday from 3:00 a.m. to 8:00 p.m., and Tuesday and Friday 3:00 a.m. to 9:00 p.m. and Saturday from 8:30 a.m. to 9:00 p.m. (Eastern Time).

**TDB COST**

The cost of access to the TDB file is $22 per hour during prime time (10:00 a.m. to 5:00 p.m.), and $15 per hour at non-prime times. There is a charge of $0.15 per page for offline printout (effective October 1, 1981).

**TDB USER SERVICES**

For Online Systems services including access to the TDB file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone (301) 496-6193

For TDB content, including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone (301) 496-1131

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

INSIDE

---

SHORT COURSE ON STATISTICAL METHODS IN CANCER EPIDEMIOLOGY

IARC (International Agency for Research on Cancer)
Lyon, France 19-23 July 1982
See page 4 for full details

1982 HAZARDOUS MATERIALS SPILLS CONFERENCE

Milwaukee, Wisconsin 19-22 April 1982
See page 12 for full details

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

69

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

NEWARK PUBLIC LIBRARY
APR 20 1982
U. S. GOVT. PUBS.
DEPOSITORY 376

PB82-9150012
NUMBER 69
FEBRUARY 1982

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## TABLE OF CONTENTS

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 NTP Toxicological Testing Program: Status of Ochratoxin A
7 NTP Toxicological Testing Program: Status of Naphthalene
9 NTP Toxicological Testing Program: Status of 2-Bromo-4,6-Dinitroaniline
11 NTP Toxicological Testing Program: Status of $\beta$-Bromo-$\beta$-Nitrostyrene
13 NTP Toxicological Testing Program: Status of Cadmium Nitrate
15 NTP Toxicological Testing Program: Status of C.I. Direct Yellow 11
17 NTP Toxicological Testing Program: Status of C.I. Vat Blue 1
19 NTP Toxicological Testing Program: Status of 1,8-dihydroxy-4,5-Dinitroanthraquinone
21 NTP Toxicological Testing Program: Status of Ethylbenzene
23 NTP Toxicological Testing Program: Status of n-Hexane
25 NTP Toxicological Testing Program: Status of Isobutyraldehyde
27 NTP Toxicological Testing Program: Status of 2-Mercaptobenzimidazole
29 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
35 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
39 SUPPORTING AND PERFORMING ORGANIZATIONS
43 INDEX OF COMPOUNDS
45 NOTICE OF RESEARCH PROJECT BLANK FORM
47 TDB CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20. 3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:
North American Continent addresses $40
All others $80
Bulk rates available on request from NTIS

## FROM THE EDITOR

Dear Colleague:

The Toxicology Information Program (TIP) in the Specialized Information Services (SIS) division of the National Library of Medicine (NLM) is responsible for the provision of four online files under the Library's MEDLARS system. From time to time, abridged information sheets concerning

CHEMLINE, TOXLINE, RTECS, TOXICOLOGY DATA BANK

have been published in TOX-TIPS. These databases constitute the NLM chemical and toxicological files.

As you may have noticed, these information sheets have been revised recently. This is not the only change that has occurred in the SIS user-support products.

There are now three types of user-aids available for the NLM Chemical and Toxicological Databases; these are the user-guides, pocket cards, and information sheets.

Regular users of SIS files received a copy of the user guides last fall. These guides are also provided to all those receiving training at NLM in the use of MEDLARS. Additional copies of the user guides may be purchased from NTIS for $30 each set. See inside cover for the address from which the document can be ordered. Please cite product number PB82-143215.

Information sheets and pocket cards can be obtained from the Toxicology Information Program upon request. Questions about the National Library of Medicine's activities in toxicology information and related areas will also be welcomed.

EDITOR, TOX-TIPS

# TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NCI No. C56586
and/or
Control No: NTP No. 10268-Y

PROJECT TITLE:

NTP Toxicological Testing Program: Status of Ochratoxin A

INVESTIGATOR(S):

Chemical Manager:

Dr. W. Eastin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code: Battelle Columbus Laboratory
Columbus, OH 43201

PERIOD FOR THIS NRP:
Start Date: June 1979
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program Executive Committee selected 28 chemicals for extensive toxicological characterization. One of these, Ochratoxin A, is already on test. Prechronic testing began April 1981, and chronic testing is expected to begin in late 1982. The chemical is being administered to rats by gavage.

CAS Registry No.
Ochratoxin A 303-47-9

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Powers MB
CARCINOGENESIS BIOASSAY OF OCHRATOXIN A
Toxicology Research Projects Directory, Vol.07 iss.01 1981

KANISAWA M ; SUZUKI S
CARCINOGENICITY OF OCHRA TOXIN A IN THE EXPERIMENT ANIMALS
ABSTR ANNU MEET AM SOC MICROBIOL; (79). 1979 205

KANISAWA M ; SUZUKI S
Induction of renal and hepatic tumors in mice by ochratoxin A, a mycotoxin.
GANN; 69 (4). 1978 599-600

HIRONO I
NATURAL CARCINOGENIC PRODUCTS OF PLANT ORIGIN
CRIT REV TOXICOL; 8 (3). 1981. 235-266.

DOERR JA ; HUFF WE
INTERACTIVE EFFECTS OF AFLA TOXIN AND OCHRA TOXIN A ON SOME BLOOD CONSTITUENTS IN BROILER CHICKENS
69TH ANNUAL MEETING OF THE POULTRY SCIENCE ASSOCIATION, INC.
POULT SCI; 59 (7). 1980. 1600.

HUFF WE ; DOERR JA
SYNERGISM OF OCHRA TOXIN A AND AFLA TOXIN IN BROILER CHICKENS
69TH ANNUAL MEETING OF THE POULTRY SCIENCE ASSOCIATION, INC.
POULT SCI; 59 (7). 1980. 1623.

GUPTA M ; BANDYOPADHYAY S ; PAUL B ; MAZUMDAR SK
Ovarian steroidogenesis and development of fetuses following ochratoxin A treatment in pregnant rats.
ENDOKRINOLOGIE; 77 (2). 1981. 152-160.

Rati ER ; Basappa SC ; Murthy VS ; Ramesh HP ; Ramesh BS Singh GB
The synergistic effect of aflatoxin B1 and ochratoxin A in rats
J. Food Sci. Technol.; VOL 18, ISS 5, 1981,176-9

Siraj MY ; Phillips TD ; Hayes AW
Effects of the mycotoxins citrinin and ochratoxin A on hepatic mixed-function oxidase and adenosinetriphosphatase in neonatal rats
J. Toxicol. Environ. Health; VOL 8, ISS 1-2, 1981,131-40

SUZUKI S ; MOROI K ; YAMAZAKI M ; KANISAWA M
ENTERO TOXICITY OF A MYCO TOXIN OCHRA TOXIN A
53RD GENERAL MEETING OF THE JAPANESE PHARMACOLOGICAL SOCIETY, GIFU, JAPAN, MARCH 26-29, 1980. JPN J PHARMACOL; 30 (SUPPL.). 1980 (RECD. 1981). 223P.

PRIOR MG ; SISODIA CS ; O'NEIL JB
Effects of ochratoxin A on egg production, body weight and feed intake in White Leghorn hens.
POULT SCI; 60 (6). 1981. 1145-1148.

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10046-P
and/or
Control No: NCI No. C52904B

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Naphthalene

INVESTIGATOR(S):
Chemical Manager:

Dr. S. Brown

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION
Name and Address
Including Zip Code

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program Executive Committee selected 28 chemicals for extensive toxicological characterization. One of these, naphthalene, was tested previously through the prechronic phase. It is now committed to a two-year bioassay.

CAS Registry No.
Naphthalene 91-20-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Thayer P
CARCINOGENIC POTENTIAL OF CONDENSED VOLATILES FROM ROOFING ASPHALT AND COAL TAR PITCH FUMES
Toxicology Research Projects Directory, Vol.04 iss.12 1979

Kawai M
Toxicological and occupational aspects of naphthalene
Aromatikkusu; VOL 31, ISS 7/8, 1979,168-83

Bickers DR ; Kappas A
Human skin aryl hydrocarbon hydroxylase: Induction by coal tar
J. Clin. Invest.; VOL 62, ISS 5, 1978,1061-8

Anon
Toxic substances control. Second report of the interagency testing committee
Fed. Regist.; VOL 43, ISS 76, 1978,16684-8

Wolf O
[Cancer of the larynx in naphthalene cleaners]
Z Gesamte Hyg; VOL 24, ISS 10, 1978, P737-9

SCHMELTZ I ; TOSK J ; HILFRICH J ; HIROTA N ; HOFFMANN D
WYNDER EL
BIOASSAYS OF NAPHTHALENE AND ALKYL NAPHTHALENES FOR CO CARCINOGENIC ACTIVITY RELATION TO TOBACCO CARCINOGENESIS
JONES, PETER W. AND RALPH I. FREUDENTHAL (ED.). CARCINOGENESIS-A COMPREHENSIVE SURVEY, VOL. 3. POLYNUCLEAR AROMATIC HYDROCARBONS. SECOND INTERNATIONAL SYMPOSIUM ON ANALYSIS, CHEMISTRY, AND BIOLOGY. COLUMBUS, OHIO, USA, SEPT. 1977. XX+487P. ILLUS. RAVEN PRESS: NEW YORK, N.Y., USA. ISBN 0-89004-241-1.; 1978 47-60

BENKENDORF CAR
METABOLIC PATHWAYS OF THE N-SUBSTITUTED NAPHTHALENES: THEIR RELATIONSHIP TO MUTAGENICITY AND CARCINOGENICITY
DISS ABSTR INT B; 39:2723,1978

JERINA DM ; LEHR R ; SCHAEFER-RIDDER M ; YAGI H ; KARLE JM
THAKKER DR ; WOOD AW ; LU AYH ; RYAN D ; WEST S ; LEVIN W
CONNEY AH
BAY-REGION EPOXIDES OF DIHYDRODIOLS: A CONCEPT EXPLAINING THE MUTAGENIC AND CARCINOGENIC ACTIVITY OF BENZO(A)PYRENE AND BENZO(A)ANTHRACENE
COLD SPRING HARBOR CONF CELL PROLIFERATION; 4:639-658,1977

ANDERSON D ; STYLES JA
AN EVALUATION OF 6-SHORT-TERM TESTS FOR DETECTING ORGANIC CHEMICAL CARCINOGENS. APPENDIX 2. THE BACTERIAL MUTATION TEST
BR J CANCER; 37:924-930,1978

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S)
Contract No: NTP No. 10244-8
and/or
Control No: NCI No. C60844

PROJECT TITLE:
NTP Toxicological Testing Program: Status of 2-Bromo-4,6-Dinitroaniline

INVESTIGATOR(S):
Chemical Manager:

Dr. K. Chu

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is 2-bromo-4,6-dinitroaniline.

CAS Registry No.
2-Bromo-4,6-dinitroaniline 1817-73-8

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Dreikorn BA
Preparation of compounds and fungicidal compositions
Braz. Pedido PI PATENT NO. 79 00462 08/21/79 (Lilly, Eli, and Co.)

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10245-W
and/or
Control No: NCI No. C60855

PROJECT TITLE:
NTP Toxicological Testing Program: Status of β-Bromo-β-Nitrostyrene

INVESTIGATOR(S):
Chemical Manager:

Dr. H. Weber

Contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is beta-bromo-beta-nitrostyrene.

CAS Registry No.
beta-Bromo-beta-nitrostyrene 7166-19-0 TOX-TIPS FEBRUARY 1982 69-11

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Dore JC ; Viel C
Antitumoral chemotherapy. X. Cytotoxic and antitumoral activity
of beta-nitrostyrenes and nitrovinyl derivatives
Farmaco, Ed. Sci.; VOL 30, ISS 2, 1975,81-109

Shema BF ; Brink RH Jr ; Swered P
Slime control compositions and their use
U.S. PATENT NO. 3827873 08/06/74 (Betz Laboratories, Inc.)

Friend PL ; Whitekettle WK
Biocides and water cooling towers
Dev. Ind. Microbiol.; VOL 21,, 1980,123-31

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10221-P
and/or
Control No: NCI No. C61381

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Cadmium Nitrate

INVESTIGATOR(S):
Chemical Manager:

Dr. J. Dunnick

Contact:
DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is cadmium nitrate.

CAS Registry No.
Cadmium nitrate 10325-94-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

KANEMATSU N ; HARA M ; KADA T
REC ASSAY AND MUTAGENICITY STUDIES ON METAL COMPOUNDS
MUTAT RES; 77:109-116,1980

Bringmann G ; Kuehn R
Comparison of the toxicity thresholds of water pollutants to bacteria, algae, and protozoa in the cell multiplication inhibition test
Water Res.; VOL 14, ISS 3, 1980,231-41

Juhnke I ; Luedemann D
Results of the study of 200 chemical compounds on acute fish toxicity using the Golden Orfe test
Z. Wasser Abwasser Forsch.; VOL 11, ISS 5, 1978,161-4

Vorob'eva RS ; Shabalina LP
Comparative toxicity of cadmium compounds
Aktual. Probl. Gig. Tr.; 1978,14-19

Abbondandolo A
Collection and evaluation of data on mutagenic effects of environmental chemicals
Comm. Eur. Communities, [Rep.] EUR; ISS EUR 6388, Environ. Res. Programme,, 1980,670-3

BHATTACHARJEE D ; SHETTY TK ; SUNDARAM K
A COMPARATIVE STUDY ON THE EFFECT OF VARIOUS CHEMICALS ON MICE SPERMATOGONIAL CELLS
MUTAT RES; 53:151,1978

Bringmann G ; Kuehn R
Results of the damaging effect of water pollutants on Daphnia magna
Z. Wasser Abwasser Forsch.; VOL 10, ISS 5, 1977,161-6

Bringmann G ; Kuehn R
Limiting values for the damaging action of water pollutants to bacteria (Pseudomonas putida) and green algae (Scenedesmus quadricauda) in the cell multiplication inhibition test
Z. Wasser Abwasser Forsch.; VOL 10, ISS 3-4, 1977,87-93

KADA T ; HIRANO K ; SHIRASU Y
SCREENING OF ENVIRONMENTAL CHEMICAL MUTAGENS BY THE REC-ASSAY SYSTEM WITH BACILLUS SUBTILIS
CHEM MUTAGENS:PRIN METHODS THEIR DETECTION; 6:149-173,1980

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No.
and/or
Control No: NCI No.

PROJECT TITLE:
NTP Toxicological Testing Program: Status of C.I. Direct Yellow 11

INVESTIGATOR(S):
Chemical Manager:

Dr. W. Eastin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental
Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 29909

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is C.I. Direct Yellow 11.

CAS Registry No.
C.I. Direct Yellow 11 1325-37-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Little LW ; Lamb JC II ; Chillingworth MA ; Durkin WB
Acute toxicity of selected commercial dyes to the fathead minnow and evaluation of biological treatment for reduction of toxicity
Eng. Bull. Purdue Univ., Eng. Ext. Ser.; VOL 145, Pt. 1,, 1974,524-34

Hof CR ; Ulin RA
Temperature indicating compositions of matter
U.S. PATENT NO. 4232552 11/11/80 (Akzona, Inc.)

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S)
Contract No:
and/or
Control No: NCI No. C61392

PROJECT TITLE:
NTP Toxicological Testing Program: Status of C.I. Vat Blue 1

INVESTIGATOR(S):
Chemical Manager:

Dr. J. Mennear

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is C.I. Vat Blue 1.

CAS Registry No.
C.I. Vat Blue 1 482-89-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Chao S ; Li C ; Hsueh K
Mutagenicity testing of thirty-six chemicals including pesticides, food additives and drugs in the Salmonella/microsome system
Shih Yen Sheng Wu Hsueh Pao; VOL 12, ISS 1, 1979,41-9

Muzzall JM ; Cook WL
Mutagenicity test of dyes used in cosmetics with the Salmonella/mammalian-microsome test
Mutat. Res.; VOL 67, ISS 1, 1979,1-8

Helou JH
Additives in drugs. Characteristics of various synthetic organic dyes
An. Farm. Quim. Sao Paulo; VOL 19, ISS 1, 1979,157-88

TSUJITA J ; TAKEDA H ; EBIHARA K ; KIRIYAMA S
Comparison of protective activity of dietary fiber against the toxicities of various food colors in rats.
NUTR REP INT; 20 (5). 1979. 635-642.

Boutibonnes P
Effect of food additives and drugs on cytotoxic activity of aflatoxin B1 on bacterial cells
IRCS Med. Sci.: Libr. Compend.; VOL 5, ISS 12, 1977,560

WEBER RW ; HOFFMAN M ; RAINE D A JR ; NELSON HS
Incidence of bronchoconstriction due to aspirin, azo dyes, non-azo dyes, and preservatives in a population of perennial asthmatics.
J ALLERGY CLIN IMMUNOL; 64 (1). 1979. 32-37.

Maurer T
Predictive evaluation of the allergenic effect of drugs and dyes in experimental animals
Acta Pharm. Technol., Suppl.; VOL 8,, 1979,37-44

Anon
D&C Blue No. 6. Listing for use in surgical sutures
Fed. Regist.; VOL 42, ISS 239, 1977,62471-2

Anon
Provisional listing of D&C Blue No. 6; termination of closing date
Fed. Regist.; VOL 42, ISS 239, 1977,62473-4

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10213-P
NCI No. C60742

PROJECT TITLE:
NTP Toxicological Testing Program: Status of 1,8-dihydroxy-4,5-Dinitroanthraquinone

INVESTIGATOR(S):
Chemical Manager:

Dr. R. Irwin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is 1,8-dihydroxy-4,5-dinitroanthraquinone.

CAS Registry No.
1,8-Dihydroxy-4,5-dinitroanthraquinone 81-55-0

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

ROSENKRANZ HS ; LEIFER Z
DETERMINING THE DNA-MODIFYING ACTIVITY OF CHEMICALS USING DNA POLYMERASE-DEFICIENT ESCHERICHIA COLI
CHEM MUTAGENS:PRIN METHODS THEIR DETECTION; 6:109-147,1980
14484-64-1

SAARI WS ; WILLIAMS J ; BRITCHER SF ; WOLF DE ; KUEHL FA JR
TYROSINE HYDROXYLASE INHIBITORS. SYNTHESIS AND ACTIVITY OF SUBSTITUTED AROMATIC AMINO ACIDS
J. MED. CHEM.; VOL 10, ISS 6, 1967,1008-14

BROWN JP ; BROWN RJ
MUTAGENESIS BY 9,10-ANTHRAQUINONE DERIVATIVES AND RELATED COMPOUNDS IN SALMONELLA TYPHIMURIUM
MUTAT RES; 40:203-224,1976

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10018-Y
and/or
Control No: NCI No. C56393

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Ethylbenzene

INVESTIGATOR(S):
Chemical Manager:

Dr. H. Plotnick

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address Including Zip Code:
National Institute for Occupational Safety and Health
Taft Laboratories C22
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is ethylbenzene.

CAS Registry No.
Ethylbenzene 100-41-4

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Anon
Ambient Water Quality Criteria for Ethylbenzene
Govt Reports Announcements & Index (GRA&I), Issue 04, 1981

Santodonato J ; Meylan WM ; Davis LN ; Howard PH ; Orzel DM
Investigation of selected potential environmental contaminants:
styrene, ethylbenzene, and related compounds
Report; ISS EPA-560/11-80-018, TR-80-569; Order No. PB81-102659,,
1980,279 pp.

Nicholson WJ ; Selikoff IJ ; Seidman H
Mortality experience of styrene-polystyrene polymerization
workers. Initial findings.
Scand J Work Environ Health; VOL 4 Suppl 2, 1978, P247-52

CONNELL DW ; MILLER GJ
PETROLEUM HYDRO CARBONS IN AQUATIC ECOSYSTEMS BEHAVIOR AND
EFFECTS OF SUBLETHAL CONCENTRATIONS 2
CRIT REV ENVIRON CONTROL; 11 (2). 1981. 105-162.

Caldwell RS ; Caldarone EM ; Mallon MH
Effects of a seawater-soluble fraction of Cook Inlet crude oil
and its major aromatic components on larval stages of the
Dungeness crab, Cancer magister Dana
Fate Eff. Pet. Hydrocarbons Mar. Ecosyst. Org., Proc. Symp.;
1977,210-20

Nunes P ; Benville PE Jr
Acute toxicity of the water-soluble fraction of Cook Inlet crude
oil to the Manila clam
Mar. Pollut. Bull.; VOL 9, ISS 12, 1978,324-31

KOPFLER FC ; MELTON RG
HUMAN EXPOSURE TO WATER POLLUTANTS
SUFFET, IRWIN H. (ED.). ADVANCES IN ENVIRONMENTAL SCIENCE AND
TECHNOLOGY VOL. 8. FATE OF POLLUTANTS IN THE AIR AND WATER
ENVIRONMENTS. PART 2. CHEMICAL AND BIOLOGICAL FATE OF POLLUTANTS
IN THE ENVIRONMENT. SYMPOSIUM AT THE 165TH NATIONAL AMERICAN
CHEMICAL SOCIETY MEETING IN THE ENVIRONMENTAL CHEMISTRY DIVISION.
PHILADELPHIA, PA., USA, APRIL 1975. XX+442P. ILLUS. MAPS. JOHN
WILEY & SONS, INC.: NEW YORK, N.Y., USA. ISBN 0-471-83539-0(PART
1); ISBN 0-471-01803-1(PART 2).; 1977 (RECD 1978) 419-433

BENVILLE P E JR ; KORN S
The acute toxicity of six monocyclic aromatic crude oil
components to striped bass (Morone saxatilis) and bay shrimp
(Crangon franciscorum).
CALIF FISH GAME; 63 (4). 1977 204-209

Lauwerys R ; Buchet JP ; Roels H
Biological methods for surveillance of workers exposed to various
industrial toxic substances
Cah. Med. Trav.; VOL 17, ISS 2, 1980,91-7

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10189-N
and/or
Control No: NCI No. C60571

PROJECT TITLE:
NTP Toxicological Testing Program: Status of n-Hexane

INVESTIGATOR(S):
Chemical Manager:

Dr. J. Dunnick

Contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute of Environmental
Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is n-hexane.

CAS Registry No.
n-Hexane 110-54-3

TOX-TIPS FEBRUARY 1982 69-23

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Joergensen NK ; Cohr KH
n-Hexane and its toxicologic effects
Scand. J. Work, Environ. Health; VOL 7, ISS 3, 1981,157-68

Cavender F ; Gralla E
INHALATION STUDY OF N-HEXANE VAPOR
Toxicology Research Projects Directory, Vol.06 iss.05 1981

KAWACHI T ; YAHAGI T ; KADA T ; TAZIMA Y ; ISHIDATE M ; SASAKI M
SUGIYAMA T
COOPERATIVE PROGRAM ON SHORT-TERM ASSAYS FOR CARCINOGENICITY IN JAPAN
IARC(INT AGENCY RES CANCER)SCI PUBL; 27:323-330,1980

SHIFMAN MA ; GRAHAM DG ; PRIEST JW ; BOULDIN TW
The neurotoxicity of 5-nonanone: Preliminary report.
TOXICOL LETT (AMST); 8 (4-5). 1981. 283-288.

TOFTGARD R ; GUSTAFSSON J-A ; NILSEN OG
Changes in rat liver microsomal cytochrome P-450 and enzymatic activities after the inhalation of n-hexane, xylene, methylethyl ketone and methylchloroform for 4 weeks.
SCAND J WORK ENVIRON HEALTH; 7 (1). 1981. 31-37.

Ballesteros Fern'andez JA ; De la Calle del Moral E
Sanfeliciano G'omez E ; Mairata Bosch S ; Marcos Franco J
Obrador Adrover A
[Polyneuropathy caused by n-hexane]
Rev Clin Esp; VOL 161, ISS 4, 1981, P257-8

Ruff RL ; Petito CK ; Acheson LS
Neuropathy associated with chronic low level exposure to n-hexane.
Clin Toxicol; VOL 18, ISS 5, 1981, P515-9

Baxter CS ; Fish LA ; Bash JA
Comitogenic activity of n-alkane and related tumor promoters in murine lymphocytes
Teratog., Carcinog., Mutagen.; VOL 1, ISS 4, 1981,345-51

Nishiuchi Y
Toxicity of pesticides to some aquatic animals. II. Toxicity of several solvents to carp and Daphnia
Seitai Kagaku; VOL 4, ISS 3, 1981,45-7

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No:** NTP No. 10261-W
**and/or**
**Control No:** NCI No. C60968

**PROJECT TITLE:**
NTP Toxicological Testing Program: Status of Isobutyraldehyde

**INVESTIGATOR(S):**
Chemical Manager:

Dr. J. McCoy

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.**
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

**PERIOD FOR THIS NRP:**
**Start Date:** -
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is isobutyraldehyde.

CAS Registry No.
Isobutyraldehyde 78-84-2

TOX-TIPS FEBRUARY 1982 69-25

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

FLORIN I ; RUTBERG L ; CURVALL M ; ENZELL CR
SCREENING OF TOBACCO SMOKE CONSTITUENTS FOR MUTAGENICITY USING THE AMES' TEST
TOXICOLOGY; 15:219-232,1980

Thelestam M ; Curvall M ; Enzell CR
Effect of tobacco smoke compounds on the plasma membrane of cultured human lung fibroblasts
Toxicology; VOL 15, ISS 3, 1980,203-17

MCMAHON RE ; CLINE JC ; THOMPSON CZ
Assay of 855 test chemicals in ten tester strains using a new modification of the Ames test for bacterial mutagens.
CANCER RES; 39 (3). 1979. 682-693.

SZYBALSKI W
SPECIAL MICROBIOLOGICAL SYSTEMS. 2.OBSERVATIONS ON CHEMICAL MUTAGENESIS IN MICROORGANISMS
ANN N Y ACAD SCI; 76:475-489,1958

MENEGHINI R ; HOFFMANN ME ; DURAN N ; FALJONI A ; CILENTO G
DNA DAMAGE DURING THE PEROXIDASE-CATALYZED AEROBIC OXIDATION OF ISOBUTANAL
BIOCHIM BIOPHYS ACTA; 518:177-180,1978

AUERBACH C ; MOUTSCHEN-DAHMEN M ; MOUTSCHEN J
Genetic and cytogenetical effects of formaldehyde and related compounds.
MUTAT RES; 39 (3-4). 1977 317-362

Obe G ; Beek B
Mutagenic activity of aldehydes
Drug Alcohol Depend.; VOL 4, ISS 1-2, 1979,91-4

SASAKI Y ; ENDO R
MUTAGENICITY OF ALDEHYDES IN SALMONELLA-TYPHIMURIUM
MUTAT RES; 54 (2). 1978 251-252

KOPFLER FC ; MELTON RG
HUMAN EXPOSURE TO WATER POLLUTANTS
SUFFET, IRWIN H. (ED.). ADVANCES IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY VOL. 8. FATE OF POLLUTANTS IN THE AIR AND WATER ENVIRONMENTS. PART 2. CHEMICAL AND BIOLOGICAL FATE OF POLLUTANTS IN THE ENVIRONMENT. SYMPOSIUM AT THE 165TH NATIONAL AMERICAN CHEMICAL SOCIETY MEETING IN THE ENVIRONMENTAL CHEMISTRY DIVISION. PHILADELPHIA, PA., USA, APRIL 1975. XX+442P. ILLUS. MAPS. JOHN WILEY & SONS, INC.: NEW YORK, N.Y., USA. ISBN 0-471-83539-0(PART 1); ISBN 0-471-01803-1(PART 2).; 1977 (RECD 1978) 419-433

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Dept. of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10264-H
and/or
Control No: NCI No. C60980

PROJECT TITLE:

NTP Toxicological Testing Program: Status of 2-Mercaptobenzimidazole

INVESTIGATOR(S):
Chemical Manager:

Dr. J. Quest

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, Room 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is 2-mercaptobenzimidazole.

CAS Registry No.
2-Mercaptobenzimidazole 583-39-1

TOX-TIPS FEBRUARY 1982 69-27

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box Y Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Bell SC ; Wei PH L
Syntheses of heterocyclic fused thiazole acetic acids. 2
J. Med. Chem.; VOL 19, ISS 4, 1976,524-30

BARILYAK IR
EMBRYOTOXIC AND MUTAGENIC EFFECT OF 2-MERCAPTO-BENZIMIDAZOLE
FIZIOL AKT VESHCHESTVA; 6:85-88,1974

Berntsson PB ; Carlsson SA I ; Garberg LE ; Junggren UK
Sjostrand SE ; Von Wittken Sundell GW
Agents affecting the secretion of gastric acid
Belg. PATENT NO. 834973 02/16/76 (Aktiebolag Hassle)

BARILYAK IR ; RATSKAYA GV ; MEL'NIK EK
IMMUNOLOGICAL INVESTIGATIONS IN THE PRESENCE OF CONGENITAL
CHROMOSOMAL PATHOLOGY(CLINICO-EXPERIMENTAL DATA)
CYTOL GENET(ENGL ED); 13:58-63,1979
(TRANSLATED FROM TSITOLOGIYA I GENETIKA 13:64-69,1979)

BARILYAK IR ; RUTSKAYA GV ; MEL'NIK EK
CERTAIN IMMUNOLOGICAL STUDIES IN INBORN CHROMOSOMAL
PATHOLOGY(CLINICO-EXPERIMENTAL DATA)
TSITOL GENET; 13:64-69,1979

RUDDICK JA ; NEWSOME WH ; NASH L
CORRELATION OF TERATOGENICITY AND MOLECULAR
STRUCTURE:ETHYLENETHIOUREA AND RELATED COMPOUNDS
TERATOLOGY; 13:263-266,1976

BARILYAK IR
EFFECT OF HYDROLASE ENZYMES OF THE LYSOSOMES ON RAT EMBRYOS
SOV J DEV BIOL(ENGL TRANSL ONTOGENEZ); 8:451-455,1977
(TRANSLATED FROM ONTOGENEZ 8:521-524,1977)

BARILYAK IR
RELATION BETWEEN EMBRYONIC CELL MITOTIC ACTIVITY AND THE
INJURIOUS EFFECT OF SOME AGENTS ON EMBRYOGENESIS
FIZIOL AKT VESHCHESTVA; 8:106-108,1976

BARILYAK IR ; BELOUSOVA AA
INFLUENCE OF SOME CHEMICAL TERATOGENIC SUBSTANCES ON THE
EMBRYOGENESIS OF THE HEARING ORGAN
ZH USHN NOS GORL BOLEZN; 35:18-22,1975

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS

National Library of Medicine

Toxicology Information Program

Bethesda, MD 20209

Telephone 301/496-1131

## STUDYING TOXIC RESPONSES IN FETAL AND YOUNG ANIMALS

The field of pre and postnatal toxicity and the methods used to study toxic responses in fetal and young animals are rapidly developing. Neurobehavioral toxicology in young animals following the administration of toxic agents to the mother during gestation is becoming more clearly defined and understood. The following items are chosen to illustrate the current state of the art in this field.

Nelson, B.K. Dose/effect relationships in developmental neurotoxicology [editorial]
*Neurobehav Toxicol Teratol* 3,355, 1981.

Wolkowski-Tyl, R. Reproductive and teratogenic effects: no more thalidomides?
*ACS Symp SER* 160(CH08): 115-155, 1981.

> Teratology is defined and the history of the field is outlined. Both human and animal teratology and teratological agents are discussed. Tests and procedures are reviewed and new ones are described and analyzed. The extrapolation of animal data to human situations is considered. "Teratogenic susceptibility is thought to depend on the specificity and disposition of the agent and the specificity of the target."

Reinhardt, D. and Richter, O. Drug effects on embryo and fetus. 2. Diaplacental transport of drugs.
*Fortschr Med* 99, 1384-8, 1981.

> Seldom is treatment of the unborn child the purpose of the administration of drugs to the mother. No direct relationship appears to exist between the chemical structure, the pharmacological activity, or the toxicity of a drug as judged by its effect on the adult and the effect it may have on the fetus. At present, assessment of the toxicity or teratogenicity of a drug depends upon evaluation of the type of drug, the developmental status of the embryo at the time of administration, and the access which the drug gains to the conceptus. The individual susceptibility of the individual and the final disposition of the drug are also of importance. The authors demonstrate and discuss the pharmokinetics of diaplacental drug transfer.

Pedersen, R.A. Embryo cultures and environmental toxicity.
*Toxicological Research Projects Directory,* vol 7 issue 02, 1982.

> Embryos cultured from the 2 egg stage to the egg cylinder state will be used because they form the three primary germ layers and have the morphology and ultrastructure

of embryos developing in utero. The patterns of protein synthesis will be followed using two dimensional chromatography. These tests will provide the normal bases against which the effects of chemical substances or of radiation can be judged.

Vorhees, C.V. et al. Developmental neurobehavioral toxicity of butylated hydroxyanisole (BHA) in rats.
*Neurobehav Toxicol Teratol* 3, 321-9, 1981.

This paper describes the techniques developed by these authors who have pioneered in the field to study the neurobehavioral effects of a compound. They note "... that BHA is not a potent behavioral toxin although it is developmentally toxic using non-behavioral measures."

Gryder, R.M. and Frankos, V.H. editors. Effects of foods and drugs on the development and function of the nervous system: Methods for predicting toxicity
*Proc Fifth FDA Science Symposium*, Oct 10-12, 1979. Available from the Office of Health Affairs, FDA.

This important symposium dealt with neurobehavioral development and maintenance, methods for assessing neurotoxicity, current status of neurotoxicity screening procedures, current issues in neurotoxicity and suggested future directions for detection of neurotoxicity. The sessions included oral presentations and a poster session.

---

## RESEARCH-IN-PROGRESS

The following citations are taken from reports of research-in-progress as appearing in TOXICOLOGY RESEARCH PROJECTS DIRECTORY, a component of the TOXLINE database from which complete descriptions and additional information are available.
See also Pedersen, R.A. above.

Miller, R.W. et al. Discovery and development of methods for control of insects affecting livestock.
*Toxicology Research Projects Directory*, vol 7, issue 02, 1982.

> This research, although dealing principally with problems of insect control, does also consider the problems of assessing the values of various types of insecticides and therefore would be of interest to those testing such toxic agents.

Edwards, M.S. et al. Radiation sensitized neurotoxicity.
*Toxicology Research Projects Directory*, vol 7, issue 02, 1982.

> This research, although planned to study two hypoxic cell radiosensitizers, will evaluate the efficacy of electrophysiological tests as a measure of neurotoxicity. Patients with CNS tumors who are undergoing radiation therapy with and without the use of a radiosensitizer will be studied. The tests used include nerve train analysis, brain stem and cortical evoked potentials. Attempts will also be made to modify the neurotoxicity by the administration of additional drugs.

---

## JOURNAL LITERATURE

Antozak, K. and Wilozynska, U. [Selection of a statistical model for the evaluation of the reliability of the results of toxicological analyses. II. Selection of our statistical model for the evaluation]
*Med Pr* 31, 453-7, 1980.

> The model presented by the authors includes a reference value based on their measurements using two independent analytical methods and data from laboratories selected on the basis of the deviation of their data from the reference values. "..Subsequent quality controls and particular laboratories have been evaluated.." based on statistical evaluation of the data using variance analysis, t-student's test and difference test.

Lindsay, R.M. et al. Platelet function as an assay for uremic toxins.
*Artif Organs* 4 Suppl 82-9, 1981.

> The authors have developed an *in vitro* platelet system sensitive to drugs as well as to uremic toxins. They suggest that the platelet preparation could be useful to study the toxicity of "middle molecules.." in a biological system. Their experiments illustrate the usefulness of such a system and point out some of the problems encountered and the need for "...careful controls..."

Andersen, M.E. Saturable metabolism and its relationship to toxicity.
*CRC Crit Rev Toxicol* 9, 105-50, 1981.

> This paper discusses the central role played by metabolic processes in the toxicity of drugs. A drug may be metabolized to a less effective form, or an ineffective drug may be changed to a more toxic one. The ease and form in which a substance is excreted also are important in determining its effective form and the length of time it remains in the body. The metabolism and excretion of drugs is almost entirely dependent upon enzymes and carrier proteins, i.e., specific binding proteins. These pathways can become saturated at sufficiently high substrate or drug concentrations. "Development of comprehensive pharmacokinetic descriptions of the influence of saturable clearance on delivery of active chemical to target sites augers well for improving both intraspecies and interspecies extrapolation of toxicity data." The author concludes that much work remains to be done in this rewarding area.

---

## GOVERNMENT REPORTS

Bioassay Guideline 1: General guidelines for bioassay programs. Report of the Working Group on Bioassay and *in vivo* Monitoring

Criteria to the Federal-Provincial Advisory Committee on Environmental and Occupational Health. Published by Authority of the Minister of National Health and Welfare, January, 1980. Copies of this report may be obtained from: Information Directorate, Department of National Health and Welfare, 5th floor, Brooke Claxton Building, Ottawa, KIA OK9. Cite Report No. 81-EHD-56

Thompson, C.R. et al. Development of a protocol for testing effects of toxic substances on plants.
*Report;* ISS EPA-600/3-81-006; Order No. PB81-157901, 1981.

> The effects of toxic substances in the environment upon plants can be measured by the bioassay procedures described in this report. To test the method, eight different plant species were treated with seven compounds. The reproducibility of the method was checked by two successive runs with the same compound.

## Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
75-07-0 Acetaldehyde...68:19
75-38-7 Vinylidene fluoride...68:35
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3
79-11-8 Chloroacetic acid...57:19
79-06-1 Acrylamide...55:21, 55:23
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21
87-62-7 2,6-Xylidine...56:29, 59:13
87-86-5 Pentachlorophenol...66:5
91-20-3 Naphthalene...69:7
91-64-5 Coumarin...57:27
91-79-2 Thenyldiamine (Pharmaceutical)...64:9
91-80-5 Methapyrilene...64:15
91-81-6 Tripelenamine...64:7
91-84-9 Pyrilamine...64:11
92-48-8 6-Methylcoumarin...57:23
93-76-5 2,4,5-T...66:5
94-66-2 Diethyl phthalate...57:31
94-75-7 2,4-D...66:5
95-50-1 1,2-Dichlorobenzene...55:31

| | |
|---|---|
| 95-86-3 | 2,4-Diaminophenol...64:25 |
| 95-95-4 | 2,4,5-Trichlorophenol...68:33 |
| 96-09-3 | Styrene oxide...65:17 |
| 98-85-1 | alpha-Methylbenzyl alcohol...61:23 |
| 100-02-7 | p-Nitrophenol...65:13 |
| 100-40-3 | 4-Vinylcyclohexene...57:9 |
| 100-41-4 | Ethylbenzene...69:21 |
| 100-42-5 | Styrene...55:27 |
| 100-44-7 | Benzyl chloride...65:5 |
| 101-90-6 | Diglycidyl resorcinol ether...63:9 |
| 101-77-9 | 4,4'-Methylenedianiline...63:13 |
| 103-90-2 | 4-Hydroxyacetanilide...57:25 |
| 104-55-2 | Cinnamaldehyde...64:27 |
| 106-46-7 | 1,4-Dichlorobenzene...55:33 |
| 106-47-8 | p-Chloroaniline...60:21 |
| 106-87-6 | 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25 |
| 107-02-8 | Acrolein...59:23 |
| 107-07-3 | Ethylene chlorohydrin...58:19 |
| 107-15-3 | Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17 |
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9 |
| 110-54-3 | Hexane...55:21, 69:23 |
| 110-80-5 | 2-Ethoxyethanol...65:3, 66:9 |
| 111-15-9 | 2-Ethoxyethanol acetate...65:3 |
| 111-30-8 | Glutaraldehyde...57:15 |
| 111-76-2 | 2-Butoxyethanol...65:3, 66:9 |
| 111-90-0 | 2-(2-Ethoxyethoxy)ethanol...65:3 |
| 115-07-1 | Propylene...58:23 |
| 115-09-3 | Methylmercuric chloride...55:23 |
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27 |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 |
| | (petroleum)...66:13, 66:15 |
| 120-40-1 | Lauric acid dietholamine (con 1/1); (Bis(2-hydroxyethyl)lauramide)...61:21 |
| 121-19-7 | Roxarsone...59:19 |
| 121-79-9 | Propyl gallate...63:17 |
| 24-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23, 69:5 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 482-89-3 | C.I. Vat Blue 1...69:17 |

| | |
|---|---|
| 469-21-6 | Doxylamine...64:23 |
| 470-82-6 | 1,8-Cineole...64:29 |
| 509-14-8 | Tetranitromethane...55:15, 56:27 |
| 518-47-8 | C.I. Acid Yellow 73...58:11 |
| 542-56-3 | Isobutyl nitrite...64:17 |
| 542-75-6 | 1,3-Dichloropropene...63:7 |
| 542-78-9 | Malonaldehyde...58:17 |
| 555-30-6 | Methyldopa...67:29 |
| 569-61-9 | C.I. Basic Red 9, monohydrochloride...58:13 |
| 583-39-1 | 2-Mercaptobenzimidazole...69:27 |
| 584-84-9 | 2,4-Toluene diisocyanate...59:7 |
| 598-55-0 | Methyl carbonate...67:27 |
| 828-00-2 | Dimethoxane...61:11 |
| 868-85-9 | Dimethyl hydrogen phosphite...59:3 |
| 924-42-5 | N-Methylolacrylamide...57:21 |
| 989-38-8 | Rhodamine 6G...58:9 |
| 1271-19-8 | Titanocene dichloride...60:31 |
| 1306-19-0 | Cadmium oxide...68:21 |
| 1306-23-6 | Cadmium sulfide...68:23 |
| 1309-37-1 | Ferric oxide...62:5 |
| 1317-71-1 | Olivine...62:7 |
| 1325-37-7 | C.I. Direct Yellow 11...69:15 |
| 1330-20-7 | Xylene...62:11, 67:11 |
| 1338-23-4 | 2-Butanone, peroxide...62:15 |
| 1344-00-9 | Sodium aluminosilicate...56:15 |
| 1817-73-8 | 2-Bromo-4,6-dinitroaniline...69:9 |
| 1854-26-8 | Dimethyloldihydroxyethyleneurea...60:19 |
| 2058-46-0 | Oxytetracycline hydrochloride...57:13 |
| 2385-85-5 | Mirex...63:15 |
| 2425-85-6 | C.I. Pigment Red 3...61:15 |
| 2429-74-5 | C. I. Direct Blue 15...68:27 |
| 2429-74-5 | C. I. Direct Blue 15...68:25 |
| 2475-45-8 | C.I. Disperse Blue 1...65:25 |
| 2610-05-1 | C. I. Direct Blue 1...68:25 |
| 2624-17-1 | Sodium cyanurate...56:17 |
| 2757-90-6 | Agraitine...63:3 |
| 5634-39-9 | Iodinated glycerol...62:19 |
| 5716-15-4 | Maleic hydrazide diethanolamine salt...58:5 |
| 5989-27-5 | d-Limonene...60:27 |
| 6471-49-4 | C.I. Pigment Red 23...61:13 |
| 7166-19-0 | beta-Bromo-beta-nitrostyrene...69:11 |
| 7440-41-7 | Beryllium...66:11 |
| 7487-94-7 | Mercuric chloride...59:31 |
| 7631-86-9 | Silica...62:7 |
| 7681-49-4 | Sodium fluoride...56:19 |
| 7782-50-5 | Chlorine...64:3 |
| 7783-81-5 | Uranium-238 hexafluoride...55:9 |
| 9002-92-0 | Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5 |

| | |
|---|---|
| 9003-39-8 | 1-Vinyl-2-pyrrolidinone polymers...68:29 |
| 9005-65-6 | Polysorbate 80...60:15 |
| 10028-15-6 | Ozone...59:25 |
| 10098-97-2 | Strontium-90...56:9 |
| 10325-94-7 | Cadmium nitrate...69:13 |
| 12001-28-4 | Crocidolite...63:27 |
| 12001-29-5 | Chrosotile...63:25 |
| 12172-73-5 | Amosite...63:23 |
| 12266-32-9 | Plutonium-238 dioxide...61:7 |
| 12741-11-6 | Zirconium silicate...62:7 |
| 13552-44-8 | 4,4'-Methylenedianiline dihydrochloride...63:13 |
| 13961-86-9 | Oleic acid dietholamine salt...65:15 |
| 13968-56-4 | Plutonium-239 tetranitrate...61:7 |
| 14047-09-7 | 3,3',4,4'-Tetrachloroazobenzene...58:3 |
| 14808-60-7 | Quartz...62:5 |
| 14567-73-8 | Tremolite...63:19 |
| 15117-96-1 | Uranium-235...55:9 |
| 16127-62-1 | Amosite...63:23 |
| 16561-29-8 | 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21 |
| 19086-72-7 | Olivine...62:7 |
| 21232-47-3 | 3,3',4,4'-Tetrachloroazoxybenzene...58:3 |
| 21645-51-2 | Hydrated alumina (Aluminum hydroxide)...62:5 |
| 22840-34-2 | Plutonium-239 dioxide...56:11, 61:7 |
| 26628-22-8 | Sodium azide...56:31 |
| 26677-58-7 | Plutonium-239 citrate...56:11 |
| 36355-01-8 | Hexabromobiphenyl...64:13 |
| 52551-67-4 | HC Yellow No. 4...64:5 |
| 53799-46-5 | Crocidolite...63:27 |
| 58425-86-8 | Aluminum silicate...62:7 |
| 61076-97-9 | Chrysotile...63:25 |
| 61105-31-5 | Crocidolite...63:27 |
| 64741-55-5 | Light catalytic cracked naphtha...67:3, 67:5 |
| 64741-56-6 | Vacuum residuum (petroleum)...67:21 |
| 64741-62-4 | Catalytic cracked clarified oil (petroleum)...67:23 |
| 64741-63-5 | Light catalytic reformed naphtha (petroleum)...66:25, 66:27 |
| 64741-87-3 | Sweetened naphtha (petroleum)...66:17, 66:19 |
| 64742-48-9 | Hydrotreated heavy naphtha (petroleum)...67:17, 67:19 |
| 64742-80-9 | Hydrodesulfurized middle distillate |
| 64742-81-0 | Hydrodesulfurized kerosene (petroleum)...66:21, 66:23 |
| 68334-30-5 | Petroleum products, diesel oil...61:9 |
| 68476-34-6 | Fuels, diesel, no. 2...61:9 |

## Supporting and Performing Organizations

American Petroleum Products
  *Coate, W....67:7
  *Furst, A....67:25
  *Hepler, D. I....67:9, 67:15
  *Jagannath,...67:13
  *Schroeder, R.E....67:11
  *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  *Weaver, N.K....55:27
  Sponsored studies...67:23
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13
Biodynamics...67:11
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S. 60:5, 60:9, 60:11
  Yang, C.S....60:7
  Zelenak, J.P....60:9
  Sponsored studies...60:5
Central Institute for Nutrition & Food...68:19
Chemistry Industry Institute of Technology
  *Gralla, E....55:3, 55:5
  *Stack, C.R....55:27, 55:29, 55:31, 55:33
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Cnemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3
Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27
  Coate, W. B....55:25

*Project Officer/Compound Manager

Inhalation Toxicology Research Institute
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp...57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13
Lovelace Biomedical and Environmental Research Institute
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9
  Snipes, M. B....56:9
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27
  Sponsored studies...55:21, 55:23, 58:3
National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21
  *Brown, D....55:9
  *Boeniger, M....55:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  *Cox, C....60:3
  *Donaldson, H....66:3
  *Elliott, L....56:3, 56:7
  *Herrick, B....60:3
  *Honchar, P....66:5
  Lewis, T. R....62:5
  Nelson, B.K....65:3

*Project Officer/Compound Manager

- National Institute for Occupational Safety and Health (Cont.)
  - *Reeve, G....66:7
  - *Okun, A....66:11
  - *Robinson, C....55:7
  - *Rosenberg, M....66:9
  - Stern, F. B....62:3
  - *Taylor, P....55:13
  - Wagner, W. D....62:9
  - *Whalen, J....56:5
  - *Whitmire, C....55:15
  - Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
- National Institutes of Health
  - Sponsored studies...61:3
- National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27
  - *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21
  - *Birnbaum, L....59:9
  - *Brown, S....69:7
  - *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15
  - *Chu, K....69:9
  - *Creasia, D....65:5, 65:17, 65:23
  - *Dean, J....60:17, 65:11
  - *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
  - *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
  - *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23
  - *Eastin, W....69:5, 69:5, 69:15
  - *Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29
  - *Gupta, B....59:5
  - *Hartwell, W....58:5, 59:19, 59:21, 60:21
  - *Huff, J....63:15, 64:33
  - *Irwin, R....59:29, 64:25, 65:13, 69:19
  - *Jackson, C....64:17
  - *Jameson, C. W....55:17, 60:27, 63:3
  - *Kluwe, W. M....57:5, 65:9
  - *Lamb, J. C....57:29, 63:13
  - *Matthews, H....59:11, 59:27, 65:21
  - *McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
  - *McCoy, J.L....60:19, 69:25
  - *Melnick, R....56:21, 59:17, 63:11
  - *Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17
  - *Padarathsingh, M....62:19
  - *Plotnick, H....69:21
  - *Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
  - *Quest, J....67:27, 69:27
  - *Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
  - *Van Stee, E....60:13

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

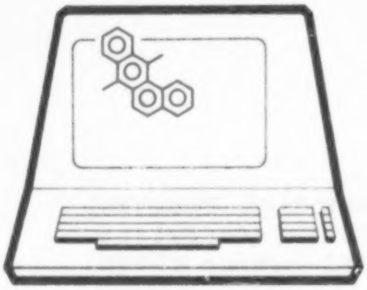
  *Ward, J.M....58:17, 58:19, 58:21, 61:11
  *Weber, H....69:11
  *Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17
  Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
  Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29
Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

## INDEX OF COMPOUNDS

National Toxicology Program/National Cancer Institute Bioassay Reports may be ordered from the National Technical Information Service, Springfield, Virginia 22161, using the PB-number cited.

- 2-Bromo-4,6-dinitroaniline
  - Toxicological characterization...69:9
- beta-Bromo-beta-nitrostyrene
  - Toxicological characterization...69:11
- Cadmium nitrate
  - Toxicological characterization...69:13
- C.I. Direct Yellow 11
  - Toxicological characterization...69:15
- 1,8-Dihydroxy-4,5-dinitroanthraquinone
  - Toxicological characterization...69:19
- Ethylbenzene
  - Toxicological characterization...69:21
- n-Hexane
  - Toxicological characterization...69:23
- Isobutyraldehyde
  - Toxicological characterization...69:25
- 2-Mercaptobenzimidazole
  - Toxicological characterization...69:27
- Naphthalene
  - Toxicological characterization...69:7
- Ochratoxin A
  - Rat - gavage...69:5
- C. I. Vat Blue 1
  - Toxicological characterization...69:17



# TIP

TOXICOLOGY INFORMATION PROGRAM

# CONDENSED

**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

Bethesda, Maryland 20209

**TIP MISSION**

The Toxicology Information Program was established at the National Library of Medicine (NLM) in 1967 in response to recommendations made in the 1966 report, "Handling of Toxicological Information", prepared by the President's Science Advisory Committee. The general objectives of TIP are: (1) the creation of computerized toxicology data bases from the scientific literature and from the files of collaborating industries, academic institutions, and government agencies; and (2) the provision of toxicology information products and services to the scientific community. These services consist of a variety of online information retrieval services, query response services, and several publications.

**TIP ONLINE SERVICES**

TIP maintains several online, interactive retrieval services in toxicology which may be accessed via terminals connected (through telephone networks) to the NLM computer. These services are available Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 5:00 P.M. (Eastern Time). Prime time, defined at 10:00 A.M. to 5:00 P.M., is more expensive than non-prime time.

**TIP QUERY RESPONSE**

The Toxicology Information Response Center (TIRC), sponsored by TIP at the Oak Ridge National Laboratory, performs literature searches for a service fee of $35/hour. Search requests should be addressed to: Director, TIRC, Oak Ridge National Laboratory, P.O. Box X, Bldg. 2024, Oak Ridge, TN 37830; telephone 615/576–1743 or FTS 626–1743.

**TIP PUBLICATIONS**

TIRC also prepares specialized, annotated bibliographies on current topics in toxicology. Lists and copies of these bibliographies may be obtained from the Federation of American Societies for Experimental Biology (FASEB), Special Publications, 9650 Rockville Pike, Bethesda, MD 20814.

Under the sponsorship of the DHHS Committee to Coordinate Environmental and Related Programs, TIP reports new toxicity testing projects, including epidemiological studies, in TOX–TIPS (Toxicology Testing-in-Progress), a monthly current awareness bulletin available from the National Technical Information Service for $40 (North America) and $80 (other). TOX–TIPS utilizes voluntary contributions of reports about planned and ongoing testing from government, industry and academia. The Toxicology Research Projects Directory (TRPD), is no longer available as a monthly publication, but is a part of one of the subsets (RPROJ) of the TOXLINE database.

**TIP INQUIRIES**

Inquiries about the Toxicology Information Program or any of its products and services should be addressed to: Biomedical Information Services Branch, Specialized Information Services, National Library of Medicine, 8600 Rockville Pike, Bethesda, Md 20209. Telephone: 301/496–1131.

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

**Contract No:**
**and/or**
**Control No:**

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address,
Including Zip Code.

PERIOD FOR THIS NRP:

**Start Date:**

**End Date:**

**Annual Funding:**

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

**Supporting Organization**

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

**Project Title**

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

**Investigator(s)**

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

**Performing Organization**

Enter name of organization where work is actually being done.

**Start Date, End Date and Annual Funding**

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

**Project Summary**

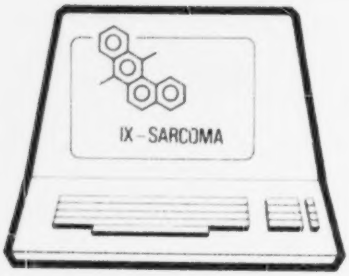
Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

**Send All Notices of Research Projects Directly To:**

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

☆U.S. GOVERNMENT PRINTING OFFICE: 1982 361-756/503 1-3



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# TDB
TOXICOLOGY DATA BANK
# CONDENSED

Bethesda, Maryland 20209

### TDB DEFINED

The Toxicology Data Bank (TDB) is an online, interactive file containing chemical, pharmacological, and toxicological data extracted from textbooks, handbooks, criteria documents, and monographs. The file is created by the Specialized Information Services (SIS) in collaboration with Oak Ridge National Laboratory (ORNL). It is made available through the National Library of Medicine's online service, the Medical Literature Analysis and Retrieval System (MEDLARS). TDB contains data and information on about 3000 compounds. Data in TDB have been reviewed by a peer group of scientists.

Information in TDB is organized around each chemical substance with records composed of approximately 60 different data elements. The elements are grouped into eight categories which include chemical, physical, biological, pharmacological, toxicological, and environmental information.

### TDB ACCESSED

TDB is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone lines or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

### TDB SEARCHED

TDB is primarily searched using free text terms. The human and animal/non-human toxicity excerpts have been indexed with TOXMeSH vocabulary. The user can search TDB for a particular chemical record by entering the TDB number, CAS Registry Number, or a substance name. The user can also search TDB for information on a group of compounds, or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected information reported for a given substance.

### TDB AVAILABILITY

TDB is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 9:00 P.M. (Eastern Time).

### TDB COST

The cost of access to the TDB file is $22 per hour during prime time (10:00 a.m. to 5:00 p.m.), and $15 per hour at non-prime times. There is a charge of $0.15 per page for offline printout.

### TDB USER SERVICES

For Online Systems services including access to the TDB file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-6193

For TDB content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

70

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

PB82-915003
NUMBER 70
MARCH 1982

NEWARK PUBLIC LIBRARY
MAY 18 1982
U. S. GOVT. PUBS.
DEPOSITORY 376

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

TABLE OF CONTENTS

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 NTP Toxicological Testing Program: Methyl Bromide
7 NTP Toxicological Testing Program: Status of Molybdenum Trioxide
9 NTP Toxicological Testing Program: Status of D-Phenylalanine
11 NTP Toxicological Testing Program: Status of Sucrose
13 NTP Toxicological Testing Program: Status of Talc
15 NTP Toxicological Testing Program: Status of ℓ-trans-delta(9)-Tetrahydrocannabinol
17 NTP Toxicological Testing Program: Status of alpha-Tocopherol (Vitamin E)
19 NTP Toxicological Testing Program: Status of Vanadium Pentoxide
21 NTP Toxicological Testing Program: Status of Zinc Oxide
23 Tests for Toxicologic and Carcinogenic Effects: Status of Acetonitrile
25 Tests for Toxicologic and Carcinogenic Effects: Status of Barium Chloride
27 Tests for Toxicologic and Carcinogenic Effects: Status of 4-Chloro-2-Nitroaniline
29 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
35 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
39 SUPPORTING AND PERFORMING ORGANIZATIONS
43 QUARTERLY INDEX OF COMPOUNDS
45 NOTICE OF RESEARCH PROJECT BLANK FORM
47 RTECS CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20.3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:
North American Continent addresses $40
All others $80
Bulk rates available on request from NTIS

## FROM THE EDITOR

Dear Colleague:

Several years ago, a few government agencies joined in establishing the Information Response to Chemical Concerns (IRCC) Project. These federal organizations concerned with toxic substances had a fundamental need for information about chemical substances and related topics. One goal of the Project was to produce annotated bibliographies on topics of current interest in toxicology. Six of them are now available. All of them have been prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine. They are published by the Federation of American Societies for Experimental Biology.

The IRCC Project has been sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Disease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The two most recent publications in this series are:

NLM/TIRC-81-1 Toxicity of Vanadium Compounds: A Bibliography with Abstracts 1965-1980. N.S. Dailey, S.A. Mashburn, and S.G. Winslow. July 1981. 100 pages. $15.00 postpaid.

NLM/TIRC-81-2 The effects of Environmental Chemicals on the Immune System: A Selected Bibliography with Abstracts 1969-1980. S.G. Winslow. November 1981. 76 pages. $10.00 postpaid.

The first four publications released were:

NLM/TIRC-80-1 Health and Environmental Effects of Acid Rain: An Abstracted Literature Collection 1966-1979. N.S. Dailey and S.G. Winslow. Toxicology Information Response Center. March 1980. 202 pages. $15.00 postpaid.

NLM/TIRC-80-2 Asbestos in Air: A Bibliography with Abstracts 1964-1980. J.G. Pruett and S.G. Winslow. Toxicology Information Response Center. July 1980. 52 pages. $7.00 postpaid.

Carol B. Haberman

EDITOR, TOX-TIPS

NLM/TIRC-80-4 Health Aspects of Urea/Formaldehyde Compounds. A Selected Bibliography with Abstracts 1963-1980. N.P. Drago, J.G. Pruett and S.G. Winslow. Toxicology Information Response Center. December 1980. 52 pages. $7.50 postpaid.

NLM/TIRC-80-3 Chemical Waste Disposal - Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes. A Selected Bibliography with abstracts 1964-1979. J.G. Pruett and S.G. Winslow. Toxicology Information Response Center. November 1980. 82 pages. $10.00 postpaid.

All of these documents can be ordered from: FASEB Special Publications, 9650 Rockville Pike, Bethesda MD 20814.

EDITOR, TOX-TIPS

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** NTP No. 10399-G
NCI No. C04148

**PROJECT TITLE:**
NTP Toxicological Testing Program: Methyl Bromide

**INVESTIGATOR(S):**
Chemical Manager:

Dr. Kenneth Chu

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.**
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

**PERIOD FOR THIS NRP:**
**Start Date:**
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is methyl bromide.

CAS Registry No.
Methyl bromide 74-83-9

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

TARDIFF RG ; CARLSON GP ; SIMMON V
HALOGENATED ORGANICS IN TAP WATER A TOXICOLOGICAL EVALUATION
JOLLEY, ROBERT L. (ED.). WATER CHLORINATION. ENVIRONMENTAL IMPACT AND HEALTH EFFECTS, VOL. 1. PROCEEDINGS OF THE CONFERENCE ON THE ENVIRONMENTAL IMPACT OF WATER CHLORINATION. OAK RIDGE, TENN. USA, OCT. 22-24, 1975. XVI+439P. ILLUS. ANN ARBOR SCIENCE PUBLISHERS, INC.: ANN ARBOR, MICH., USA. ISBN 0-250-40201-7.; 1978 195-209

SIMMON VF
STRUCTURAL CORRELATIONS OF CARCINOGENIC AND MUTAGENIC ALKYL HALIDES
FDA PUBL(US); (FDA-78-1046):163-171,1978

KRAYBILL HF
EVALUATION OF PUBLIC HEALTH ASPECTS OF CARCINOGENIC MUTAGENIC BIO REFRACTORIES IN DRINKING WATER
CONFERENCE ON THE PRIMARY PREVENTION OF CANCER: ASSESSMENT OF RISK FACTORS AND FUTURE DIRECTIONS, NEW YORK, N.Y., USA, JUNE 7-8, 1979. PREV MED; 9 (2). 1980. 212-218.

Rathus EM
Pesticide exposure in tropical and sub-tropical Australia.
In: Field Worker Exposure During Pesticide Application. Tordoir, H. F. and Van Heemstra, E. A. H., eds. (Elsevier Sci. Publ. Co.: NY): pp. 85-91 1980 (3 References)

Dunkelberg H
Problems in respect to the formation N-nitroso compound precursors when using alkylating agents in the fumigation of foods. II. N-methylation of various amino acids by the effect of methyl bromide
Zentralbl. Bakteriol., Abt. 1: Orig., [Reihe] B; VOL 171, ISS 1, 1980,48-54

Miyagawa M ; Hasegawa H ; Sato M ; Sudo A ; Homma T ; Suda M
Studies on intoxication due to methyl bromide (4) - evaluation of toxicity of methyl bromide by conditioned taste aversion in rats.
Sangyo Igaku Sogo-Kenkyusho Nempo (Ann. Rep. Natl. Inst. Ind. Health) pp. 23 1980

Homma T ; Sudo A ; Miyagawa M ; Sato M ; Hasegawa H ; Suda M
Studies on intoxication due to methyl bromide (3) - effects of methyl bromide on central nervous system.
Sangyo Igaku Sogo-Kenkyusho Nempo (Ann. Rep. Natl. Inst. Ind. Health) pg. 22 1980 (1 Reference)

Sato M ; Hasegawa H ; Homma T ; Miyagawa M ; Suda M ; Sudo A
Okonogi K
Studies on intoxication due to methyl bromide (2) - distribution of methyl bromide and bromine in the living body.
Sangyo Igaku Sogo-Kenkyusho Nempo (Ann. Rep. Natl. Inst. Ind. Health) pg. 22 1980 (1 Reference)

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No** and/or **Control No:** NTP No. 10297-T
NCI No. C61369

**PROJECT TITLE:**
NTP Toxicological Testing Program: Status of Molybdenum Trioxide

**INVESTIGATOR(S):**
Chemical Manager:

Dr. J. Quest

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.**
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

**PERIOD FOR THIS NRP:**
**Start Date:**
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is molybdenum trioxide.

CAS Registry No.
Molybdenum trioxide 1313-27-5

TOX-TIPS MARCH 1982 70-7

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Shimkin MB ; Stoner GD ; Theiss JC
Lung tumor response in mice to metals and metal salts
Adv. Exp. Med. Biol.; VOL 91, ISS Inorg. Nutr. Aspects Cancer,
1978,85-91

STONER GD ; SHIMKIN MB ; TROXELL MC ; THOMPSON TL ; TERRY LS
Test for carcinogenicity of metallic compounds by the pulmonary
tumor response in strain A mice.
CANCER RES; 36 (5). 1976 1744-1747

Lukashev AA ; Shishkova NK
Molybdenum and copper in the tissues and urine of rabbits in a
chronic-poisoning experiment. II
Tr. Nauch.-Issled. Inst. Kraev. Patol., Alma-Ata; VOL 22,,
1971,163-7

Lukashev AA ; Shishkova NK
Vitamins C and B2 in the tissues and urine of chronic-poisoning
experiment with inhalation administration of molybdenum
Tr. Nauch.-Issled. Inst. Kraev. Patol., Alma-Ata; VOL 22,,
1971,152-4

Lukashev AA ; Shishkova NK
Nonspecific indexes for rabbits and rats in a chronic-poisoning
experiment with molybdenum
Tr. Nauch.-Issled. Inst. Kraev. Patol., Alma-Ata; VOL 22,,
1971,191-6

Lukashev AA
Mechanism underlving the toxic action of molybdenum in the animal
organism and the effect of sulfate ion on the course of
molybdenum poisoning
Gig. Tr. Prof. Zabol.; ISS 12, 1973,13-17

LUKASHEV AA ; SHISHKOVA NK
Vitamins C and B2 in tissues and urine of animals in a chronic
experiment with inhalation of molybdenum.
TR INST KRAEV PATOL AKAD NAUK KAZ SSR; 22 1971 152-154

LUKASHEV AA ; SHISHKOVA NK
Molybdenum and copper in tissues and urine of rabbits in a
chronic experiment. (II).
TR INST KRAEV PATOL AKAD NAUK KAZ SSR; 22 1971 163-167

LUKASHEV AA ; SHISHKOVA NK
Some nonspecific indices in rabbits and rats in a chronic
experiment with molybdenum poisoning.
TR INST KRAEV PATOL AKAD NAUK KAZ SSR; 22 1971 191-196

NOTICE OF RESEARCH PROJECT

# TOX-TIPS

Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**

Contract No: NTP No. 10153-R
and/or
Control No: NCI No. C60195

**PROJECT TITLE:**

NTP Toxicological Testing Program: Status of D-Phenylalanine

**INVESTIGATOR(S):**

Chemican Manager:

Dr. K. Abdo

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

Name and Address. Including Zip Code.

National Institute of Environmental
Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

**PERIOD FOR THIS NRP:**

Start Date:
End Date:
Annual Funding:

**PROJECT SUMMARY:**

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is D-phenylalanine.

CAS Registry No.
D-Phenylalanine 673-06-3

TOX-TIPS MARCH 1982 70-9

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Ehrenpreis S ; Balagot RC ; Myles S ; Advocate C ; Comaty JE
Further studies on the analgesic activity of D-phenylalanine
(DPA) in mice and humans
Endog. Exog. Opiate Agonists Antagonists, Proc. Int. Narc. Res.
Club Conf.; 1980,379-82

Cheng R ; Pomeranz B
The antipeptidases increase electroacupuncture analgesia and show
predictable hypalgesic effects on mice with congenitally abnormal
endorphin systems
Endog. Exog. Opiate Agonists Antagonists, Proc. Int. Narc. Res.
Club Conf.; 1980,333-6

Bodnar RJ ; Lattner M ; Wallace MM
Antagonism of stress-induced analgesia by D-phenylalanine, an
anti-enkephalinase
Pharmacol., Biochem. Behav.; VOL 13, ISS 6, 1980,829-33

Borison RL ; Maple PJ ; Havdala HS ; Diamond BI
Metabolism of an amino acid with antidepressant properties
Res. Commun. Chem. Pathol. Pharmacol.; VOL 21, ISS 2, 1978,363-6

Yaryura-Tobias JA
Use of D-phenylalanine in the treatment of depression:
theoretical and clinical implications
Mod. Pharmacol.-Toxicol.; VOL 12, ISS Noncatecholic
Phenylethylamines, Part 1, 1978,489-508

Hachisu M ; Murai M ; Tanaka M ; Segawa K ; Takeshige C
Effects of D-phenylalanine on analgesia produced from acupuncture
or PAG stimulation and morphine
Showa Igakkai Zasshi; VOL 39, ISS 5, 1979,543-50

Alleva E ; Castellano C ; Oliverio A
Effects of L- and D-amino acids on analgesia and locomotor
activity of mice: their interaction with morphine
Brain Res.; VOL 198, ISS 1, 1980,249-52

Cheng RS S ; Pomeranz B
A combined treatment with D-amino acids and electroacupuncture
produces a greater analgesia than either treatment alone;
naloxone reverses these effects
Pain; VOL 8, ISS 2, 1980,231-6

Hachisu M ; Murai M ; Tanaka M ; Hisamitsu T ; Ra S ; Takeshige K
Effects of D-phenylalanine on individual differences in analgesia
of acupuncture
Shinkei Kagaku; VOL 18,, 1979,348-51

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10055-T
and/or
Control No: NCI No. C56597

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Sucrose

INVESTIGATOR(S):
Chemical Manager:

Dr. C. E. Whitmire

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is sucrose.

CAS Registry No.
Sucrose 57-50-1

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Salsburg
The effects of lifetime feeding studies on patterns of senile lesions in mice and rats.
Drug Chem Toxicol; VOL 3, ISS 1, 1980, P1-33

HALLER JK ; MILNER JA
EFFECT OF REFINED CARBOHYDRATES ON COLON CANCER IN THE ALBINO RAT
FED PROC; 38 (3 PART 1). 1979 714

Shaw JH
Sweeteners-an overview. Part II.
Dent Abstr; VOL 26, ISS 4, 1981, P172-5

Sirovar MA ; Loeb LA
On the fidelity of DNA synthesis: effects of steroids and intercalating agents
Chem.-Biol. Interact.; VOL 30, ISS 1, 1980,1-8

Hefti A
Cariogenicity of topically applied sugar substitutes in rats under restricted feeding conditions
Caries Res.; VOL 14, ISS 3, 1980,138-42

Matsushima T ; Takamoto Y ; Shirai A ; Sawamura M ; Sugimura T
Reverse mutation test on 42 coded compounds with the E. coli WP2 system
Prog. Mutat. Res.; VOL 1, ISS Eval. Short-Term Tests Carcinog.: Rep. Int. Collab. Program, 1981,387-95

Venitt S ; Crofton-Sleigh C
Mutagenicity of 42 coded compounds in a bacterial assay using Escherichia coli and Salmonella typhimurium
Prog. Mutat. Res.; VOL 1, ISS Eval. Short-Term Tests Carcinog.: Rep. Int. Collab. Program, 1981,351-60

Rowland I ; Severn B
Mutagenicity of carcinogens and noncarcinogens in the Salmonella/microsome test
Prog. Mutat. Res.; VOL 1, ISS Eval. Short-Term Tests Carcinog.: Rep. Int. Collab. Program, 1981,323-32

Tweats DJ
Activity of 42 coded compounds in a differential killing test using Escherichia coli Strains WP2, WP67 (uvrA polA), and CM871 (uvrA lexA recA)
Prog. Mutat. Res.; VOL 1, ISS Eval. Short-Term Tests Carcinog.: Rep. Int. Collab. Program, 1981,199-209

Green MH L
A differential killing test using an improved repair-deficient strain of Escherichia coli
Prog. Mutat. Res.; VOL 1, ISS Eval. Short-Term Tests Carcinog.: Rep. Int. Collab. Program, 1981,183-94

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10167-P
and/or
Control No: NCI No. C06008

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Talc

INVESTIGATOR(S):
Chemical Manager:

Dr. S. Brown

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is talc.

CAS Registry No.
Talc 14807-96-6

TOX-TIPS MARCH 1982 70-13

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Wehner AP ; Stuart BO ; Sanders CL
Inhalation studies with Syrian golden hamsters.
Prog Exp Tumor Res; VOL 24, 1979, P177-98

Selevan SG ; Dement JM ; Wagoner JK ; Froines JR
Mortality patterns among miners and millers of non-asbestiform
talc: preliminary report.
J Environ Pathol Toxicol; VOL 2, ISS 5, 1979, P273-84

Longo DL ; Young RC
Cosmetic talc and ovarian cancer [letter]
Lancet; VOL 2, ISS 8150, 1979, P1011-2

Newhouse ML
Cosmetic talc and ovarian cancer [letter]
Lancet; VOL 2, ISS 8141, 1979, P528

Longo DL ; Young RC
Cosmetic talc and ovarian cancer.
Lancet; VOL 2, ISS 8138, 1979, P349-51

Henderson WJ ; Hamilton TC ; Griffiths K
Talc in normal and malignant ovarian tissue [letter]
Lancet; VOL 1, ISS 8114, 1979, P499

THOMAS TL
A PRELIMINARY INVESTIGATION OF MORTALITY AMONG POTTERY WORKERS
13TH ANNUAL MEETING OF THE SOCIETY FOR EPIDEMIOLOGIC RESEARCH,
MINNEAPOLIS, MINN., USA, JUNE 18-20, 1980. AM J EPIDEMIOL; 112
(3). 1980. 445.

VALLYATHAN NV ; CRAIGHEAD JE
Pulmonary pathology in workers exposed to nonasbestiform talc.
HUM PATHOL; 12 (1). 1981. 28-35.

STENBACK F ; ROWLAND J
Role of talc and benzo(a)pyrene in respiratory tumor formation:
An experimental study.
SCAND J RESPIR DIS; 59 (3). 1978 130-140

LORD GH
The biological effects of talc in the experimental animal: A
literature review.
FOOD COSMET TOXICOL; 16 (1). 1978 51-58

LAMM S
DEMONSTRATION OF AN EXCESS MORTALITY IN TALC WORKERS THAT IS NOT
ATTRIBUTABLE TO THAT EXPOSURE
12TH ANNUAL MEETING OF THE SOCIETY FOR EPIDEMIOLOGIC RESEARCH,
NEW HAVEN, CONN., USA. JUNE 13-15, 1979. AM J EPIDEMIOL; 110 (3).
1979. 362.

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10275-V
NCI No. C56371

PROJECT TITLE:
NTP Toxicological Testing Program: Status of l-trans-delta(9)-Tetrahydrocannabinol

INVESTIGATOR(S):
Chemical Manager:

Dr. D. Goldman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address Including Zip Code:
National Institute of Environmental Health Sciences
National Toxicology Program
Landow Building, 3C25
7910 Woodmont Avenue
Bethesda, MD 20205

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is l-trans-delta(9)-tetrahydrocannabinol. The compound is a naturally occurring substance.

CAS Registry No.
l-trans-delta(9)-
Tetrahydrocannabinol 1972-08-3

TOX-TIPS MARCH 1982 70-15

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Spiegel RJ ; Blum RH ; Speyer JL ; Muggia FM ; Wernz JC
DELTA-9-TETRAHYDROCANNABINOL FOR NAUSEA AND VOMITING INDUCED BY ANTINEOPLASTIC CHEMOTHERAPY
Toxicology Research Projects Directory, Vol.06 iss.10 1981

Poster DS ; Penta JS ; Bruno S ; Macdonald JS
delta 9-tetrahydrocannabinol in clinical oncology.
JAMA; VOL 245, ISS 20, 1981, P2047-51

Montour JL ; Dutz W ; Harris LS
Modification of radiation carcinogenesis by marihuana.
Cancer; VOL 47, ISS 6, 1981, P1279-85

Nichols DE ; Mason DL ; Jacobsen LB
Allylbenzene analogs of DELTA9-tetrahydrocannabinol as tumor growth inhibitors
Life Sci.; VOL 21, ISS 9, 1977,1245-7

CARCHMAN RA ; WARNER W ; WHITE AC ; HARRIS LS
CANNABINOIDS AND NEOPLASTIC GROWTH
MARIHUANA:CHEM BIOCHEM CELL EFF PROC SATELL SYMP; 329-345,1976

Friedman MA
In vivo effects of cannabinoids on macromolecular biosynthesis in Lewis lung carcinomas
Cancer Biochem. Biophys.; VOL 2, ISS 2, 1977,51-4

Toro-Goyco E ; Rodriguez MB ; Preston A ; Jering H
Effect of (-)DELTA9-THC on ATPase systems from various sources
Adv. Biosci.; VOL 22-23, ISS Marihuana: Biol. Eff., 1979,229-42

Szepsenwol J ; Fletcher J ; Murison GL ; Toro-Goyco E
Long term effects of DELTA9-tetrahydrocannabinol in mice
Adv. Biosci.; VOL 22-23, ISS Marihuana: Biol. Eff., 1979,359-70

SZEPSENWOL J ; FLETCHER J ; TOYO-GOYCO E
EFFECTS OF DELTA-9 TETRA HYDRO CANNABINOL IN MICE
FED PROC; 37 (3). 1978 450

Cocchetto DM ; Owens SM ; Perez-Reyes M ; DiGuiseppi S ; Miller LL
Relationship between plasma DELTA9-tetrahydrocannabinol concentration and pharmacologic effects in man
Psychopharmacology (Berlin); VOL 75, ISS 2, 1981,158-64

Cocchetto DM ; Cook LF ; Cato AE
A critical review of the safety and antiemetic efficacy of DELTA-9-tetrahydrocannabinol
Drug Intell. Clin. Pharm.; VOL 15, ISS 11, 1981,867-75

Ashton H ; Golding J ; Marsh VR ; Millman JE ; Thompson JW
The seed and the soil: effect of dosage, personality and starting state on the response to DELTA9-tetrahydrocannabinol in man
Br. J. Clin. Pharmacol.; VOL 12, ISS 5, 1981,705-20

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No:** NTP No. 10081-C
**and/or**
**Control No:** NCI No. C61370

**PROJECT TITLE:**
NTP Toxicological Testing Program: Status of alpha-Tocopherol (Vitamin E)

**INVESTIGATOR(S):**
Chemical Manager:

Dr. K. Abdo

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address Including Zip Code:**
National Institute of Environmental Health Sciences
National Toxicology Program
P.O. Box 12233
Research Triangle Park, NC 27709

**PERIOD FOR THIS NRP:** _
**Start Date:**
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is alpha-Tocopherol (Vitamin E).

CAS Registry No.
alpha-Tocopherol 59-02-9
Vitamin E 1406-18-4

TOX-TIPS MARCH 1982 70-17

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Young VR ; Newberne PM
Vitamins and cancer prevention: issues and dilemmas.
Cancer; VOL 47, ISS 5 Suppl, 1981, P1226-40

Bruce WR ; Eyssen GM ; Ciampi A ; Dion PW ; Boyd N
Strategies for dietary intervention studies in colon cancer.
Cancer; VOL 47, ISS 5 Suppl, 1981, P1121-5

Mergens WJ ; Newmark HL
Antioxidants as blocking agents against nitrosamine formation
Autoxid. Food Biol. Syst., [Proc. Int. Workshop]; 1980,387-403

Kalinina LM ; Tarasov VA ; Sardarly GM ; Alekperov UK
Effect of alpha-tocopherol on the mutagenic repair pathways in
Escherichia coli cells
Genetika (Moscow); VOL 17, ISS 9, 1981,1644-8

Newmark HL ; Mergens WJ
alpha-Tocopherol (vitamin E) and its relationship to tumor
induction and development
Inhibition Tumor Induct. Dev.; 1981,127-68

SACHDEV GP ; WEN G ; MARTIN B ; KISHORE GS ; FOX OF
EFFECTS OF DIETARY FAT AND ALPHA TOCOPHEROL ON GAMMA GLUTAMYL
TRANS PEPTIDASE OF 7 12 DI METHYL BENZ ALPHA ANTHRACENE INDUCED
MAMMARY CARCINOMAS
71ST ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR CANCER
RESEARCH, SAN DIEGO, CALIF., USA, MAY 28-31, 1980. PROC AM ASSOC
CANCER RES AM SOC CLIN ONCOL; 21 (0). 1980. 2.

KODYTKOVA I ; MADAR J ; SRAM RJ
Chromosomal aberrations in mouse bone marrow cells and antibody
production changes induced by long-term exposure to
cyclophosphamide and alpha-tocopherol.
FOLIA BIOL (PRAGUE); 26 (2). 1980. 94-102.

BIGALIEV AB ; ELEMESOVA MSH
INFLUENCE OF ALPHA-TOCOPHEROL ON THE CYTOGENETIC EFFECT OF
CHROMIUM
CYTOL GENET(USSR); 12(5):30-32,1978
(TRANSLATED FROM TSITOL GENET 12:414-416,1978)

KAPPEN LS ; GOLDBERG IH
ACTIVATION AND INACTIVATION OF NEOCARZINOSTATIN-INDUCED CLEAVAGE
OF DNA
NUCLEIC ACIDS RES; 5:2959-2968,1978

Bucher JR ; Roberts RJ
alpha-Tocopherol (vitamin E) content of lung, liver, and blood in
the newborn rat and human infant: influence of hyperoxia
J. Pediatr.; VOL 98 ISS May 1981, P806-811, (REF 22)

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No.
and/or
Control No: NCI No.

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Vanadium Pentoxide

INVESTIGATOR(S):
Chemical Manager:

Dr. R. Niemeier

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute for Occupational Safety and Health
Taft Laboratories, C22
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is vanadium pentoxide.

CAS Registry No.
Vanadium pentoxide 1314-62-1

TOX-TIPS MARCH 1982 70-19

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Usutani S ; Nishiyama K ; Sato I ; Matsuura K ; Sawada Y
Kawabata T ; Hosokawa Y ; Izumi S
[Results of the special physical examination of workers in a vanadium plant (author's transl)]
Sangyo Igaku; VOL 21, ISS 1, 1979, P21-8

Usutani S ; Nishiyama K ; Sato I ; Matsuura K ; Sawada Y
Hosokawa Y ; Izumi S
[An investigation of the environment in a certain vanadium refinery (author's transl)]
Sangyo Igaku; VOL 21, ISS 1, 1979, P11-20

Sone K
Experimental studies on acute vanadium intoxication in rats
Hirosaki Igaku; VOL 33, ISS 1, 1981,144-77

Zychlinski L
Toxicological evaluation of workplace exposure to dust containing vanadium pentoxide
Bromatol. Chem. Toksykol.; VOL 13, ISS 2, 1980,195-9

Samoiloff MR ; Schulz S ; Jordan Y ; Denich K ; Arnott E
A rapid simple long-term toxicity assay for aquatic contaminants using the nematode Panagrellus redivivus
Can. J. Fish. Aquat. Sci.; VOL 37, ISS 7, 1980,1167-74

WALDRON HA ; HARRINGTON JM
EFFECTS OF WORK EXPOSURES ON ORGAN SYSTEMS 2. BLOOD LUNGS AND NERVOUS SYSTEM
SCHILLING, R. S. F. (ED.). OCCUPATIONAL HEALTH PRACTICE, 2ND EDITION. XVIII+630P. BUTTERWORTHS: WOBURN, MASS., USA; LONDON, ENGLAND. ILLUS. MAPS. ISBN 0-407-33701-6.; 0 (0). 1981. P115-144.

KIVILUOTO M ; PYY L ; PAKARINEN A
Clinical laboratory results of vanadium-exposed workers.
ARCH ENVIRON HEALTH; 36 (3). 1981. 109-113.

Kiviluoto M ; Pyy L ; Pakarinen A
Serum and urinary vanadium of workers processing vanadium pentoxide
Int. Arch. Occup. Environ. Health; VOL 48, ISS 3, 1981,251-6

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No.
NCI No.

PROJECT TITLE:
NTP Toxicological Testing Program: Status of Zinc Oxide

INVESTIGATOR(S):
Chemical Manager:

Dr. W. Moorman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Contact: National Toxicology Program
Attn: Joan Chase
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Institute for Occupational Safety and Health
Taft Laboratories, C22
4676 Columbia Parkway
Cincinnati, OH 45226

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In November 1981, the National Toxicology Program's Executive Committee selected 28 chemicals for extensive toxicological characterization. Experimental designs and special studies are being prepared by the chemical managers. The NTP is actively seeking information about these chemicals. Information concerning recently completed, ongoing, or planned studies should be forwarded to the chemical manager whose address is shown as the Performing Organization. Contact the NTP in Bethesda for additional information on the testing status of these chemicals.

Included in this group of chemicals is zinc oxide.

CAS Registry No.
Zinc Oxide 1314-13-2

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

GRANDJEAN P
DISEASES ASSOCIATED WITH EXPOSURE TO METALS ZINC
LAST, J. M. MAXCY-ROSENAU PUBLIC HEALTH AND PREVENTIVE MEDICINE,
11TH EDITION. XXV+1926P. APPLETON-CENTURY-CROFTS: NEW YORK, N.Y.,
USA. ILLUS. MAPS. ISBN 0-8385-6186-1.; 0 (0). 1980. P680.

Gainer JH
EFFECT OF DIETARY ZNO AND NA-ARSANILATE ON SERUM INTERFERON
LEVELS OF PIGS AS INDUCED BY POLY I-POLY C
Toxicology Research Projects Directory, Vol.06 iss.11 1981

Oberdoerster G
Toxicological and behavioral studies on rats following chronic
inhalation of zinc and cadmium aerosols. Part I
Comm. Eur. Communities, [Rep.] EUR; ISS EUR 6388, Environ. Res.
Programme,, 1980,106-13

Priestley GC ; Brown JC
Acute toxicity of Zinc pyrithione to human skin cells in vitro.
Acta Derm Venereol (Stockh); VOL 60, ISS 2, 1980, P145-48

Stoiancheva N
[Clinical studies on the calmecin effect in deep caries treatment]
Stomatologiia (Sofiia); VOL 62, ISS 2, 1980, P88-91

Straube EF ; Schuster NH ; Sinclair AJ
Zinc toxicity in the ferret.
J Comp Pathol; VOL 90, ISS 3, 1980, P355-61

Walter JF
Evaluation of seven sunscreens on hairless mouse skin
Arch. Dermatol.; VOL 117, ISS 9, 1981,547-50

Kozik MB ; Gramza G ; Pietrzak M
Neurosecretion of the hypothalamo-hypophyseal system after
intragastric administration of zinc oxide
Folia Histochem. Cytochem.; VOL 19, ISS 2, 1981,115-22 3 plates

Oberdoerster G
Toxicological and behavioral studies on rats following chronic
inhalation of zinc and cadmium aerosols. Part II
Comm. Eur. Communities, [Rep.] EUR; ISS EUR 6388, Environ. Res.
Programme., 1980.114-21

MAZIARZ L ; GODLEWSKI A
MORPHOLOGICAL AND HISTOCHEMICAL CHANGES OCCURRING IN THE BRAIN
FOLLOWING INGESTION OF LARGE DOSES OF ZINC OXIDE
THE 3RD POLISH-HUNGARIAN SYMPOSIUM ON TOXIC ENCEPHALOPATHIES AND
NEUROPATHIES, CRACOW, POLAND, SEPT. 20-22, 1979. NEUROPATOL POL;
18 (2). 1980. 331.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10242-J
NCI No. C60822

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Acetonitrile

INVESTIGATOR(S):
For further information, contact:
Technical Information Section
Dr. J. L. McCoy,
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code: Hazelton Laboratories
9200 Leesburg Pike
Vienna, VA 22180

PERIOD FOR THIS NRP:
Start Date: August 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (*in vivo* microbial, *in vivo* mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Acetonitrile has been assigned to the contractor for testing through the subchronic phase.

CAS Registry No.
Acetonitrile 75-05-8

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Bringmann G ; Kuehn R
Comparison of the toxicity thresholds of water pollutants to bacteria, algae, and protozoa in the cell multiplication inhibition test
Water Res.; VOL 14, ISS 3, 1980,231-41

Pattersson B ; Curvall M ; Enzell CR
Effects of tobacco smoke compounds on the noradrenaline induced oxidative metabolism in isolated brown fat cells
Toxicology; VOL 18, ISS 1, 1980,1-15

WILLHITE CC ; SMITH RP
Role of cyanide liberation in the acute toxicity of aliphatic nitriles.
TOXICOL APPL PHARMACOL; 59 (3). 1981. 589-602.

Thelestam M ; Curvall M ; Enzell CR
Effect of tobacco smoke compounds on the plasma membrane of cultured human lung fibroblasts
Toxicology; VOL 15, ISS 3, 1980,203-17

WILLHITE CC
MALFORMATIONS INDUCED BY INHALATION OF ACETONITRILE VAPORS IN THE GOLDEN HAMSTER
TERATOLOGY; 23:69A,1981

MARON D ; KATZENELLENBOGEN J ; AMES BN
COMPATIBILITY OF ORGANIC SOLVENTS WITH THE SALMONELLA/MICROSOME TEST
MUTAT RES; 88:343-350,1981

Fourth report of the TSCA Interagency Testing Committee to the Administrator, Environmental Protection Agency
Fed. Regist.; VOL 44, ISS 107, 1979,31866-89

Nishiuchi Y
Toxicity of pesticides to some aquatic animals. II. Toxicity of several solvents to carp and Daphnia
Seitai Kagaku; VOL 4, ISS 3, 1981,45-7

Florin I ; Rutberg L ; Curvall M ; Enzell CR
Screening of tobacco smoke constituents for mutagenicity using the Ames' test
Toxicology; VOL 15, ISS 3, 1980,219-32

Willhite CC
Inhalation toxicology of acute exposure to aliphatic nitriles
Clin. Toxicol.; VOL 18, ISS 8, 1981,991-1003

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10280-H
and/or
Control No: NCI No. C61074

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Barium Chloride

INVESTIGATOR(S):
For further information, contact:
Technical Information Section
Dr. B. Gupta,
Chemical Manager

DEPARTMENT SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (*in vivo* microbial, *in vivo* mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The barium chloride testing project is in the experimental design stage.

CAS Registry No.
Barium chloride 10361-37-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

REDDY TP ; VAIDYANATH K
SYNERGISTIC INTERACTION OF GAMMA RAYS AND SOME METALLIC SALTS IN THE INDUCTION OF CHLOROPHYLL MUTATIONS IN RICE
MUTAT RES; 52:361-365,1978

NISHIOKA H
AN EXAMPLE OF DETECTION OF ENVIRONMENTAL MUTAGENS AND A POLICY. METAL COMPOUNDS
KOGAI TO TAISAKU(J ENVIRON POLLUT CONTROL); 12:413-417,1976

SIROVER MA ; LOEB LA
INFIDELITY OF DNA SYNTHESIS IN VITRO: SCREENING FOR POTENTIAL METAL MUTAGENS OR CARCINOGENS
SCIENCE; 194:1434-1436,1976

SIROVER MA ; LOEB LA
METAL-INDUCED INFIDELITY DURING DNA SYNTHESIS
PROC NATL ACAD SCI USA; 73:2331-2335,1976

NISHIOKA H
MUTAGENIC ACTIVITIES OF METAL COMPOUNDS IN BACTERIA
MUTAT RES; 31:185-189,1975

Haruki K ; Oka M ; Kuroda K
Cytotoxicities of environmental pollutants. 1. Metal compounds
Saikatsu Eisei; VOL 22, ISS 1, 1978,18-25

Patkov V ; Todorov S ; Donav N ; Balokonskii I
Comparative studies of colon reactivity of healthy and ionization-radiated guinea pigs to some spasmogens and their antagonists
Acta Physiol. Pharmacol. Bulg.; VOL 4, ISS 1, 1978,26-37

Sagrati A ; Vocci FJ Jr ; Dewey WL
Antagonism of barium chloride lethality by atropine and naloxone analysis by a multivariate logistic model.
Toxicol Appl Pharmacol; VOL 50, ISS 1, 1979, P25-30

Talwar KK ; Sharma BK
Myocardial damage due to barium chloride poisoning.
Indian Heart J; VOL 31, ISS 4, 1979, P244-5

Juhnke I ; Luedemann D
Results of the study of 200 chemical compounds on acute fish toxicity using the Golden Orfe test
Z. Wasser Abwasser Forsch.; VOL 11, ISS 5, 1978,161-4

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or NTP No. 10208-C
Control No: NCI No. C60355

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of 4-Chloro-2-Nitroaniline

INVESTIGATOR(S):
For further information, contact:
Technical Information Section
Dr. J. L. McCoy,
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (*in vivo* microbial, *in vivo* mammalian, unscheduled DNA synthesis and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

4-Chloro-2-nitroaniline has been scheduled for testing.

CAS Registry No.
4-Chloro-2-nitroaniline 89-63-4

TOX-TIPS MARCH 1982 70-27

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Dubey SK ; Singh AK ; Singh H ; Sharma S ; Iyer RN ; Katiyar JC
Goel P ; Sen AB
Synthesis of substituted 1-hydroxy-2-naphthanilides as potential
cestodicidal agents
J. Med. Chem.; VOL 21, ISS 11, 1978,1178-80

Chakrabarti JK ; Fairhurst J ; Gutteridge NJ A ; Horsman L
Pullar IA ; Smith CW ; Steggles DJ ; Tupper DE ; Wright FC
Heteroarenobenzodiazepines. 4.
10-Piperazinyl-4H-thieno[3,2-b][1,5]- and
-[3,4-b][1,5]benzodiazepines as potential neuroleptics
J. Med. Chem.; VOL 23, ISS 8, 1980,884-9

Vasilenko NM ; Zvezdai VI ; Kovalenko II
Inactivation of the blood respiratory pigment under the effect of
aromatic niro and amino compounds from the benzene series
Sovrem. Probl. Biokhim. Dykhaniya Klin., Mater. Vses. Konf., 2nd;
VOL 1,, 1972,411-13

Sevdel JK
Prediction of the in vitro activity of sulfonamides synthesized
from simple amines by use of electronic data obtained from the
simple amines
J. Med. Chem.; VOL 14, ISS 8, 1971,724-9

Lay JP ; Scheunert I ; Anagnostopoulos E ; Klein W
Evidence of the metabolic introduction of the nitrate group into
aromatic xenobiotics
Chemosphere; VOL 8, ISS 11-12, 1979,863-7

Vasilenko NM
Specific and nonspecific indexes in blood changes during
poisoning by aromatic nitro amino compounds of the benzene series
Tr. Khar'k. Med. Inst.; VOL 124,, 1976,34-8

Vasilenko NM ; Zvezdai VI
Leading role of disturbed heme metabolism during poisoning by
aromatic nitro and amino compounds
Fiziol. Patol. Obmena Porfirinov Gema, Mater. Simp., 1st;
1974,60-3

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

---

---

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

---

---

## JOURNAL LITERATURE

Reitamo, S., et al. Allergic and toxic contact dermatitis: inflammatory cell subtypes in epicutaneous test reactions. *Br J Dermatol*, 105, 521-7, 1981.

T lymphocytes, mononuclear phagocytes, and plasma cells were identified in responses to allergic and to toxic reactions in an attempt to differentiate between these responses. The authors found no statistical difference in the basic response although it seemed possible that some degree of qualitative and quantitative difference did occur.

Gilchrest, B.A. Quantitative approach to measuring actinic aging in human skin.
*J Soc Cosmet Chem 32*, 153-162, 1981.

Tests were developed to measure quantitatively the effects of sunlight on aging skin. The number of population doublings was less in cultured cells from skin exposed to sunlight. The difference increased directly with signs of clinical aging. The method was shown to be effective in quantitatively assessing environmental effects on human skin.

Schmalz, G. and Schmalz, C. Toxicity tests on dental filling materials.
*Int Dent J 31*, 185-92, 1981.

The implantation of solid materials in rabbit muscle was studied as a method of screening chemical toxicity, in this case dental filling materials. The materials, amalgams, were allowed to age for different times before implantation. Macroscopic as well as histological evaluations were made. The reactions observed were directly dependent upon the aging time. This observation is in accord with clinical experience.

Culliton, C.R., et al. A critical evaluation of the acute systemic toxicity test for dental alloys using histopathologic criteria.
*J Biomed Mater Res 15*, 565-75, 1981.

Compliance on the basis of less than 50% mortality at 2 weeks is the definition given by the A.D.A. for an acute systemic test. In this research, histopathologic criteria were developed for type II, class 11 materials. Significant changes occurred in lung, liver, kidney, and small intestine for all alloys studied two and five weeks after treatment. At the later time, the alloys with the higher noble metal content showed healing and an absence of significant changes. On the other hand those alloys with the lower amounts of Au, Pd, and Pt still showed significant chronic changes. The standardization of such criteria and the statistical parameters will make possible reproducible and comparable results by independent investigators and examiners.

Hansen, S.R. Screening for toxic effects on interspecies interactions: a mechanistic or an empirical approach?
*Arch Environ Contam Toxicol 10,* 597-603, 1981.

Both empirical and mechanistic approaches are possible in developing tests for substances; both approaches have specific advantages and disadvantages. These are discussed by the authors in terms of the screening for a substance's potential to affect interspecies interactions. The test situation used was the competition between bacterial species and its disruption by nalidixic acid. The mechanistic test proved"...faster, cheaper, more sensitive and more quantitative." Continuous monitoring which required greater cost and time was necessary to achieve similar sensitivity and quantification for the empirical test.

Heywood, R. Target organ toxicity.
*Toxicol Lett 8,* 349-58, 1981.

The relatively simple criteria of growth, organ weight, liver and kidney function tests, and clinical observation of the animal combined with histological examination of selected tissues appeared to be the sensitive criteria of toxicology as determined in a survey of studies on 50 compounds in rodent and non-rodent species. "There was poor correlation of target organ toxicity across the species." Therefore, the absence of toxic signs is seen as more important than the demonstration of organ toxicity. The authors recommend the use of a "...step by step approach based on biological activity" to provide data necessary for safety evaluation of a compound.

Grosdanoff, P. Possible grounds for the distinct test results from embryo toxicological studies.
*AMI-Ber; Issue 1,* 125-8, 1981.

The factors that may possibly produce variations in tests on the embryotoxicity of drugs are reviewed.

Vanhaecke, P., et al. Proposal for a short-term toxicity test with Artemia nauplii.
*Eco Toxicol Environ Safety 5,* 382-7, 1981.

This is a review of the artemia toxicity test.

Zbinden, G. Experimental methods in behavioral teratology.
*Arch Toxicol 48,* 68-88, 1981.

This review describes the experimental methods which may be used as toxicological techniques to study behavioral teratogens. The author emphasizes that these methods are based on a wealth of experience and data in experimental psychology. Most of the tests have been used with rats and may be influenced by a "...large variety of environmental factors affecting the health and behavior of the mothers and of the offspring...". The importance of "...highly standardized conditions..." and their rigorous control is discussed at length.

Wyttenbach, C.R., et al. Precision delivery of small volumes of liquids to very young avian embryos: 1. Locating and positioning the embryo in ovo.
*Toxicol Appl Pharmacol 59,* 40-48, 1981.

Young embryos of three days or younger have been considered unresponsive to teratogenic agents. The authors considered the possibility that this relative unresponsiveness may be due to the difficulties of handling such embryos rather to a true failure to respond to the agents being studied. They, therefore, developed methods for candling and injecting 8 to 60-h embryos. With these methods actual contact between the embryo and injected corn oil could be shown within 45 min of injection in 90-100% of the embryos. Under these circumstances the younger embryos (24- 96-h chick embryos) were the most susceptible to malathion. The susceptibility declined with increasing age of the embryo.

Franchina, J.J. and Dietz, S. Taste aversion following backward conditioning procedures in preweanling and adult rats.
*Dev Psychobiol 14,* 499-505, 1981.

Reliable aversion effects for rats 18 and 90 days old were obtained using a two bottle choice procedure at each toxicosis-flavor interval. Greater and more reliable persistence of aversion was shown by adult animals for the 10- rather than the 30-min training interval. From test trial 2 onward "...the magnitude of aversion was similar for pups and adult rats."

Sovak, M. and Ranganathan, R. and Mutzel, W. Determination of lethal dose in a protozoa: screening of contrast media toxicity. *Invest Radiol: 16*, 438-42, 1981.

The suitability of protozoa for toxicology studies on contrast media was investigated. The time at which 50% mortality occurred was determined after the cultures were standardized using sodium iothalamate and/or Metrizamide. "Comparison of ...toxicity determined by protozoa LD50 at 7 minutes with i.v. LD50 in mice showed a good correlation ...". The protozoa assay seems, therefore, to have usefulness" ...as a complimentary or screening method."

# TOXICOLOGY INFORMATION RESPONSE CENTER
# (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

# Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-38-7 Vinylidene fluoride...68:35
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3
79-11-8 Chloroacetic acid...57:19
79-06-1 Acrylamide...55:21, 55:23
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21
87-62-7 2,6-Xylidine...56:29, 59:13
87-86-5 Pentachlorophenol...66:5
89-63-4 4-Chloro-2-nitroaniline...70:27
91-20-3 Naphthalene...69:7
91-64-5 Coumarin...57:27
91-79-2 Thenyldiamine (Pharmaceutical)...64:9
91-80-5 Methapyrilene...64:15
91-81-6 Tripelenamine...64:7
91-84-9 Pyrilamine...64:11
92-48-8 6-Methylcoumarin...57:23

93-76-5 2,4,5-T...66:5
94-66-2 Diethyl phthalate...57:31
94-75-7 2,4-D...66:5
95-50-1 1,2-Dichlorobenzene...55:31
95-86-3 2,4-Diaminophenol...64:25
95-95-4 2,4,5-Trichlorophenol...68:33
96-09-3 Styrene oxide...65:17
98-85-1 alpha-Methylbenzyl alcohol...61:23
100-02-7 p-Nitrophenol...65:13
100-40-3 4-Vinylcyclohexene...57:9
100-41-4 Ethylbenzene...69:21
100-42-5 Styrene...55:27
100-44-7 Benzyl chloride...65:5
101-90-6 Diglycidyl resorcinol ether...63:9
101-77-9 4,4'-Methylenedianiline...63:13
103-90-2 4-Hydroxyacetanilide...57:25
104-55-2 Cinnamaldehyde...64:27
106-46-7 1,4-Dichlorobenzene...55:33
106-47-8 p-Chloroaniline...60:21
106-87-6 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25
107-02-8 Acrolein...59:23
107-07-3 Ethylene chlorohydrin...58:19
107-15-3 Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17
107-21-1 Ethylene glycol...64:21
108-30-5 Succinic anhydride...56:21, 59:17
108-46-3 Resorcinol...59:29
108-78-1 Melamine...63:11
108-88-3 Toluene...55:21, 57:3, 62:3, 62:11
108-90-7 Chlorobenzene...55:29
108-94-1 Cyclohexanone...65:23
109-86-4 2-Methoxyethanol...65:3, 66:9
110-54-3 Hexane...55:21, 69:23
110-80-5 2-Ethoxyethanol...65:3, 66:9
111-15-9 2-Ethoxyethanol acetate...65:3
111-30-8 Glutaraldehyde...57:15
111-76-2 2-Butoxyethanol...65:3, 66:9
111-90-0 2-(2-Ethoxyethoxy)ethanol...65:3
115-07-1 Propylene...58:23
115-09-3 Methylmercuric chloride...55:23
115-96-8 Tris(2-chloroethyl) phosphate...59:27
119-90-4 3,3'-Dimethoxybenzidine...68:25
(petroleum)...66:13, 66:15
120-40-1 Lauric acid dietholamine (con 1/1);
(Bis(2-hydroxyethyl)lauramide)...61:21
121-19-7 Roxarsone...59:19
121-79-9 Propyl gallate...63:17
124-64-1 Tetrakis (hydroxymethyl) phosphonium chloride...55:17
127-18-4 Tetrachloroethylene...56:23, 59:15
127-85-5 Sodium arsanilate...68:31
132-98-9 Penicillin V Potassium...58:7
135-88-6 N-phenyl-2-naphthalamine...62:21
136-77-6 4-Hexylresorcinol...61:17
137-09-7 2,4-Diaminophenol dihydrochloride...64:25
140-88-5 Ethyl acrylate...58:15
150-68-5 Monuron...58:21
298-81-7 8-Methoxypsoralen...65:7
303-47-9 Ochratoxin A...62:23, 69:5
333-18-6 Ethylenediamine dihydrochloride...60:5, 60:7, 60:9
482-89-3 C.I. Vat Blue 1...69:17
469-21-6 Doxylamine...64:23

470-82-6 1,8-Cineole...64:29
509-14-8 Tetranitromethane...55:15, 56:27
518-47-8 C.I. Acid Yellow 73...58:11
542-56-3 Isobutyl nitrite...64:17
542-75-6 1,3-Dichloropropene...63:7
542-78-9 Malonaldehyde...58:17
555-30-6 Methyldopa...67:29
569-61-9 C.I. Basic Red 9, monohydrochloride...58:13
583-39-1 2-Mercaptobenzimidazole...69:27
584-84-9 2,4-Toluene diisocyanate...59:7
598-55-0 Methyl carbonate...67:27
673-06-3 D-phenylalanine...70:9
828-00-2 Dimethoxane...61:11
868-85-9 Dimethyl hydrogen phosphite...59:3
924-42-5 N-Methylolacrylamide...57:21
989-38-8 Rhodamine 6G...58:9
1271-19-8 Titanocene dichloride...60:31
1306-19-0 Cadmium oxide...68:21
1306-23-6 Cadmium sulfide...68:23
1309-37-1 Ferric oxide...62:5
1313-27-5 Molybdenum trioxide...70:7
1314-13-2 Zinc oxide...70:21
1314-62-1 Vanadium pentoxide...70:19
1317-71-1 Olivine...62:7
1325-37-7 C.I. Direct Yellow 11...69:15
1330-20-7 Xylene...62:11, 67:11
1338-23-4 2-Butanone, peroxide...62:15
1344-00-9 Sodium aluminosilicate...56:15
1406-18-4 Vitamin E...70:17
1817-73-8 2-Bromo-4,6-dinitroaniline...69:9
1854-26-8 Dimethyloldihydroxyethyleneurea...60:19
1972-08-3 l-trans-delta(9)-Tetrahydrocannabinol...70:15
2058-46-0 Oxytetracycline hydrochloride...57:13
2385-85-5 Mirex...63:15
2425-85-6 C.I. Pigment Red 3...61:15
2429-74-5 C. I. Direct Blue 15...68:27
2429-74-5 C. I. Direct Blue 15...68:25
2475-45-8 C.I. Disperse Blue 1...65:25
2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5
5989-27-5 d-Limonene...60:27
6471-49-4 C.I. Pigment Red 23...61:13
7166-19-0 beta-Bromo-beta-nitrostyrene...69:11
7440-41-7 Beryllium...66:11
7487-94-7 Mercuric chloride...59:31
7631-86-9 Silica...62:7
7681-49-4 Sodium fluoride...56:19
7782-50-5 Chlorine...64:3
7783-81-5 Uranium-238 hexafluoride...55:9
9002-92-0 Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5
9003-39-8 1-Vinyl-2-pyrrolidinone polymers...68:29
9005-65-6 Polysorbate 80...60:15
10028-15-6 Ozone...59:25
10098-97-2 Strontium-90...56:9
10325-94-7 Cadmium nitrate...69:13
10361-37-2 Barium chloride...70:25

| | |
|---|---|
| 12001-28-4 | Crocidolite...63:27 |
| 12001-29-5 | Chrosotile...63:25 |
| 12172-73-5 | Amosite...63:23 |
| 12266-32-9 | Plutonium-238 dioxide...61:7 |
| 12741-11-6 | Zirconium silicate...62:7 |
| 13552-44-8 | 4,4'-Methylenedianiline dihydrochloride...63:13 |
| 13961-86-9 | Oleic acid dietholamine salt...65:15 |
| 13968-56-4 | Plutonium-239 tetranitrate...61:7 |
| 14047-09-7 | 3,3',4,4'-Tetrachloroazobenzene...58:3 |
| 14807-96-6 | Talc...70:13 |
| 14808-60-7 | Quartz...62:5 |
| 14567-73-8 | Tremolite...63:19 |
| 15117-96-1 | Uranium-235...55:9 |
| 16127-62-1 | Amosite...63:23 |
| 16561-29-8 | 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21 |
| 19086-72-7 | Olivine...62:7 |
| 21232-47-3 | 3,3',4,4'-Tetrachloroazoxybenzene...58:3 |
| 21645-51-2 | Hydrated alumina (Aluminum hydroxide)...62:5 |
| 22840-34-2 | Plutonium-239 dioxide...56:11, 61:7 |
| 26628-22-8 | Sodium azide...56:31 |
| 26677-58-7 | Plutonium-239 citrate...56:11 |
| 36355-01-8 | Hexabromobiphenyl...64:13 |
| 52551-67-4 | HC Yellow No. 4...64:5 |
| 53799-46-5 | Crocidolite...63:27 |
| 58425-86-8 | Aluminum silicate...62:7 |
| 61076-97-9 | Chrysotile...63:25 |
| 61105-31-5 | Crocidolite...63:27 |
| 64741-55-5 | Light catalytic cracked naphtha...67:3, 67:5 |
| 64741-56-6 | Vacuum residuum (petroleum)...67:21 |
| 64741-62-4 | Catalytic cracked clarified oil (petroleum)...67:23 |
| 64741-63-5 | Light catalytic reformed naphtha (petroleum)...66:25, 66:27 |
| 64741-87-3 | Sweetened naphtha (petroleum)...66:17, 66:19 |
| 64742-48-9 | Hydrotreated heavy naphtha (petroleum)...67:17, 67:19 |
| 64742-80-9 | Hydrodesulfurized middle distillate |
| 64742-81-0 | Hydrodesulfurized kerosene (petroleum)...66:21, 66:23 |
| 68334-30-5 | Petroleum products, diesel oil...61:9 |
| 68476-34-6 | Fuels, diesel, no. 2...61:9 |

## Supporting and Performing Organizations

American Petroleum Products
  *Coate, W....67:7
  *Furst, A....67:25
  *Hepler, D. I....67:9, 67:15
  *Jagannath,...67:13
  *Schroeder, R.E....67:11
  *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  *Weaver, N.K....55:27
  Sponsored studies...67:23
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13
Biodynamics...67:11
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S.   60:5, 60:9, 60:11
  Yang, C.S....60:7
  Zelenak, J.P....60:9
  Sponsored studies...60:5
Central Institute for Nutrition & Food...68:19
Chemistry Industry Institute of Technology
  *Gralla, E....55:3, 55:5
  *Stack, C.R....55:27, 55:29, 55:31, 55:33
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3
Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 53:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23
  Coate, W. B....55:25

*Project Officer/Compound Manager

Inhalation Toxicology Research Institute
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp...57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13
Lovelace Biomedical and Environmental Research Institute
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9
  Snipes, M. B....56:9
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3
National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19
  *Brown, D....55:9
  *Boeniger, M....55:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  *Cox, C....60:3
  *Donaldson, H....66:3
  *Elliott, L....56:3, 56:7
  *Herrick, B....60:3
  *Honchar, P....66:5
  Lewis, T. R....62:5
  Nelson, B.K....65:3

*Project Officer/Compound Manager

National Institute for Occupational Safety and Health (Cont.)
*Reeve, G....66:7
*Okun, A....66:11
*Robinson, C....55:7
*Rosenberg, M....66:9
Stern, F. B....62:3
*Taylor, P....55:13
Wagner, W. D....62:9
*Whalen, J....56:5
*Whitmire, C....55:15
Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
National Institutes of Health
Sponsored studies...61:3
National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
*Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
*Birnbaum, L....59:9
*Brown, S....69:7, 70:13
*Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15
*Chu, K....69:9, 70:5
*Creasia, D....65:5, 65:17, 65:23
*Dean, J....60:17, 65:11
*Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
*Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
*Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23
*Eastin, W....69:5, 69:5, 69:15
*Goldman, D....70:15
*Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29
*Gupta, B....59:5, 70:25
*Hartwell, W....58:5, 59:19, 59:21, 60:21
*Huff, J....63:15, 64:33
*Irwin, R....59:29, 64:25, 65:13, 69:19
*Jackson, C....64:17
*Jameson, C. W....55:17, 60:27, 63:3
*Kluwe, W. M....57:5, 65:9
*Lamb, J. C....57:29, 63:13
*Matthews, H....59:11, 59:27, 65:21
*McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
*McCoy, J.L....60:19, 69:25, 70:23, 70:27
*Melnick, R....56:21, 59:17, 63:11
*Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17
*Moorman, W....70:21
*Niemeier, R....70:19
*Padarathsingh, M....62:19
*Plotnick, H....69:21

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

  *Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
  *Quest, J....67:27, 69:27, 70:7
  *Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
  *Van Stee, E....60:13
  *Ward, J.M....58:17, 58:19, 58:21, 61:11
  *Weber, H....69:11
  *Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11
  Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
  Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29
Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

## QUARTERLY INDEX OF COMPOUNDS

This quarterly index lists compounds under test and those for which tests have been completed and published. The index will be updated and reprinted in the June, 1982 issue. Citations for compounds announced as under test give the issue number and page for TOX-TIPS. Those for which testing has been completed and published cite the journal or other report in which test data can be found.

National Toxicology Program/National Cancer Institute Bioassay Reports may be ordered from the National Technical Information Service, Springfield, Virginia 22161, using the PB-number cited.

Acetaldehyde
  Hamster - inhalation - carcinogenicity...68:19
  Hamster - intratracheal - carcinogenicity...68:19
Acetonitrile
  Short term...70:23
Barium chloride
  Short term...70:25
2-Bromo-4,6-dinitroaniline
  Toxicological characterization...69:9
beta-Bromo-beta-nitrostyrene
  Toxicological characterization...69:11
Cadmium nitrate
  Toxicological characterization...69:13
Cadmium oxide
  Carcinogenicity...68:21
Cadmium sulfide
  Carcinogenicity...68:23
4-Chloro-2-nitroaniline
  Short term...70:27
1,8-Dihydroxy-4,5-dinitroanthraquinone
  Toxicological characterization...69:19
3,3'-Dimethoxybenzidine
  Carcinogenicity...68:25
C. I. Direct Blue 1
  Carcinogenicity...68:25
C. I. Direct Blue 15
  Carcinogenicity...68:25
  Rat - water - carcinogenicity...68:27
C.I. Direct Yellow 11
  Toxicological characterization...69:15
Ethylbenzene
  Toxicological characterization...69:21
n-Hexane
  Toxicological characterization...69:23
Isobutyraldehyde
  Toxicological characterization...69:25
Methyl bromide
  Toxicological characterization...70:5
2-Mercaptobenzimidazole
  Toxicological characterization...69:27

- Molybdenum trioxide
  - Toxicological characterization...70:7
- Naphthalene
  - Toxicological characterization...69:7
- Ochratoxin A
  - Rat - gavage...69:5
- D-phenylalanine
  - Toxicological characterization...70:9
- Sodium arsanilate
  - Carcinogenicity...68:31
- Sucrose
  - Toxicological characterization...70:11
- Talc
  - Toxicological characterization...70:13
- l-trans-delta(9)-Tetrahydrocannabinol
  - Toxicological characterization...70:15
- alpha-Tocopherol
  - Toxicological characterization...70:14
- 2,4,5-Trichlorophenol
  - Carcinogenicity...68:33
- Vanadium pentoxide
  - Toxicological characterization...70:19
- C. I. Vat Blue 1
  - Toxicological characterization...69:17
- Vitamin E
  - Toxicological characterization...70:17
- Vinylidene fluoride
  - Carcinogenicity...68:35
- 1-Vinyl-2-pyrrolidinone polymers
  - Carcinogenicity...68:29
- Zinc oxide
  - Toxicological characterization...70:21

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

## Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

## Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

## Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

## Performing Organization

Enter name of organization where work is actually being done.

## Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

## Project Summary

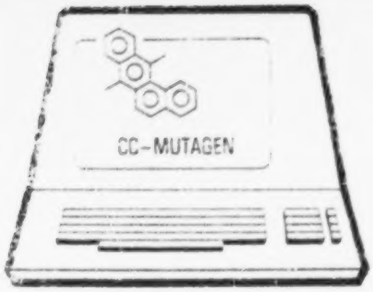
Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

## Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

*U.S. GOVERNMENT PRINTING OFFICE: 1982 361-756/504 1-3



NATIONAL LIBRARY OF MEDICINE
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

EXCERPTED FROM

# RTECS

## REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES

# CONDENSED

Bethesda, Maryland 20209

**RTECS DEFINED**

RTECS (Registry of Toxic Effects of Chemical Substances) is in the National Library of Medicine's online version of the National Institute for Occupational Safety and Health's (NIOSH) annual compilation of substances with toxic action. The original collection of data that makes up RTECS was known as the Toxic Substances List, compiled in 1971 by NIOSH in response to the Occupational Safety and Health Act of 1970. The hard copy version of RTECS is updated annually with quarterly microfiche editions available. NIOSH is responsible for the file content in RTECS, and for providing quarterly updates to NLM. RTECS currently contains toxicity data for more than 50,000 substances (1/82).

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability.

**RTECS ACCESSED**

RTECS is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

**RTECS SEARCHED**

The user can search RTECS for a particular chemical record by entering the Secondary Source ID, CAS Type 1 Name, Synonyms, or CAS Registry Number. The user can also search RTECS for information on a group of compounds or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected effects reported for a given substance. Online RTECS gives the user the flexibility of interactive searching and retrieval which allows focusing on subsets of data and tailoring of prints according to user needs.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

cont'd from inside back cover

**RTECS AVAILABILITY**

RTECS is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 5:00 P.M. (Eastern Time.)

**RTECS COST**

The cost of access to the RTECS file is $22 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $15 per hour at non prime times. There is a charge of $0.15 per page for offline printout.

**RTECS USER SERVICES**

For Online Systems services including access to the RTECS file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For RTECS content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–1131

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

71

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

NEWARK PUBLIC LIBRARY

JUN 22 1982

U. S. GOVT. PUBS.
DEPOSITORY 376

PB82-915004

NUMBER 71
APRIL 1982

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## TABLE OF CONTENTS

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 NATIONAL TOXICOLOGY PROGRAM LIST
22 TDB CONDENSED
23 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
27 Risk Assessment Study of Dimethylamine
29 Nitrobenzene: 90 day Inhalation Study in Rats and Mice
31 Methyl Chloride Reproduction and Fertility Study in Fischer 344 Rats
33 90 day Vapor Inhalation Toxicity Study on n-Hexane in Albino Rats
35 90 day Vapor Inhalation Toxicity Study on Methyl Ethyl Ketone in Albino Rats
37 90 day Hydrogen Sulfide Vapor Inhalation Toxicity Study in Rats and Mice
39 90 day Carbon Disulfide Vapor Inhalation Toxicity Study in Rats and Mice
41 Chronic Inhalation Toxicity Study on Chlorine in Rats and Non-Human Primates
43 Evaluation of Pulmonary Function, Structure, Composition, and Other Endpoints After Exposure of Fischer-344 Rats to Silica Dust
45 INDEX OF COMPOUNDS
46 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
51 SUPPORTING AND PERFORMING ORGANIZATIONS
56 TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)
57 NOTICE OF RESEARCH PROJECT BLANK FORM
59 CHEMLINE CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20.3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

| Annual Rates: | |
|---|---|
| North American Continent addresses | $40 |
| All others | $80 |

Bulk rates available on request from NTIS

## FROM THE EDITOR

Dear Colleague:

This issue contains a complete listing of the reports available from the National Technical Information Service concerning the National Cancer Institute/National Toxicology Program Carcinogenesis Testing Program. Two hundred forty-two reports are available from NTIS, and another ten are in preparation.

These reports describe experiments designed to determine whether selected chemicals produce cancer in animals. Most of the studies were initiated by the National Cancer Institute's Carcinogenesis Testing Program which is now a part of the National Institute of Environmental Health Sciences, National Toxicology Program.

Chemicals selected for testing in the NTP Carcinogenesis Bioassay Program are chosen primarily on the bases of human exposure, level of production, and chemical structure. Selection of a chemical for study is not an indicator of the substance's carcinogenic potential; furthermore, positive results demonstrate that the substance is carcinogenic for animals under the conditions of the test. Such results indicate that exposure to the chemical is a potential hazard to humans.

Please order reports available from NTIS directly from that organization.

Carol B. Haberman

EDITOR, TOX-TIPS

# NATIONAL TOXICOLOGY PROGRAM

# CARCINOGENESIS TESTING PROGRAM

## REPORTS AVAILABLE

as of April 1982

National Toxicology Program
Carcinogenesis Testing Program

## REPORTS IN PRESS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO |
|---|---|---|---|---|---|---|
| 10754-C | 9002-13-0 | Agar | C50475 | FEED | RM | 230 |
| 10034-Y | 80-05-7 | Bisphenol A | C50635 | FEED | RM | 215 |
| 10723-Y | 3567-69-9 | C.I. Acid Red 14 | C53849 | FEED | RM | 220 |
| 10465-X | 96-12-8 | Dibromochloropropane | C00500B | INHAL | RM | 206 |
| 10513-F | 106-93-4 | 1,2-Dibromoethane | C00522B | INHAL | RM | 210 |
| 10647-A | 609-20-1 | 2,6-Dichloro-para-Phenylenediamine | C50260 | FEED | RM | 219 |
| 10183-J | 117-81-7 | Di(2-Ethylhexyl)Phthalate | C52733 | FEED | RM | 217 |
| 10752-T | 9000-30-0 | Guar Gum | C50395 | FEED | RM | 229 |
| 10793-E | 39300-88-4 | Tara Gum | C54364 | FEED | RM | 224 |
| 10157-G | 1746-01-6 | 2,3,7,8-Tetrachlorodibenzo-p-Dioxin | C03714A | GAV | RM | 209 |

To determine availability of these reports, contact:
Steven d'Arazien, National Toxicology Program, NIEHS,
Post Office Box 12233, Research Triangle Park, NC 27709.

## National Toxicology Program
## Carcinogenesis Testing Program

### REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10667-R | 968-81-0 | Acetohexamide | C03247 | FEED | RM | 50 | PB284675/AS |
|  | 7008-42-6 | Acronycine | C01536 | IP/IJ | RM | 49 | PB283347/AS |
|  | 50-76-0 | Actinomycin D | C04682 | IP/IJ | RM | a | JOURNAL ART |
| 10713-R | 2757-90-6 | Agaritine | C08899 | WATER | RM |  |  |
| 10539-V | 116-06-3 | Aldicarb | C08640 | FEED | RM | 136 | PB298511/AS |
|  | 309-00-2 | Aldrin | C00044 | FEED | RM | 21 | PB275666/AS |
| 10516-S | 107-05-1 | Allyl Chloride | C04615 | GAV | RM | 73 | PB287516/AS |
| 10542-A | 117-79-3 | 2-Aminoanthraquinone | C01876 | FEED | RM | 144 | PB287739/AS |
| 10901-K | 17026-81-2 | 3-Amino-4-Ethoxyacetanilide | C01887 | FEED | RM | 112 | PB285194/AS |
| 10579-C | 132-32-1 | 3-Amino-9-Ethylcarbazole, Hydrochloride | C03043 | FEED | RM | 93 | PB287126/AS |
| 10419-Y | 82-28-0 | 1-Amino-2-Methylanthraquinone | C01901 | FEED | RM | 111 | PB286852/AS |
| 10547-V | 119-34-6 | 4-Amino-2-Nitrophenol | C03963 | FEED | RM | 94 | PB286189/AS |
| 10561-L | 121-66-4 | 2-Amino-5-Nitrothiazole | C03065 | FEED | RM | 53 | PB283346/AS |
| 10433-F | 101-05-3 | Anilazine | C08684 | FEED | RM | 104 | PB287141/AS |
| 10596-F | 142-04-1 | Aniline Hydrochloride | C03736 | FEED | RM | 130 | PB287539/AS |
| 10582-G | 134-29-2 | o-Anisidine Hydrochloride | C03747 | FEED | RM | 89 | PB285879/AS |
| 10775-W | 20265-97-8 | p-Anisidine Hydrochloride | C03758 | FEED | RM | 116 | PB286951/AS |
|  | 118-92-3 | o-Anthranilic Acid | C01730 | FEED | RM | 36 | PB278883/AS |

a "Cancer", 1977, Vol. 40 pp 1935-1949.

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

## REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10804-S | 11097-69-1 | Arochlor-1254 | C02664 | FEED | R | 38 | PB279624/AS |
| 10749-N | 8003-03-0 | Aspirin, Phenacetin, And Caffeine | C02697 | FEED | RM | 67 | PB284684/AS |
| 10889-A | 320-67-2 | 5-Azacytidine | C01949 | IP/IJ | RM | 42 | PB279526/AS |
|  | 446-86-6 | Azathioprine | C03474 | IP/IJ | RM | a | JOURNAL ART |
| 10424-L | 86-50-0 | Azinphosmethyl | C00066 | FEED | RM | 69 | PB286371/AS |
| 10499-L | 103-33-3 | Azobenzene | C02926 | FEED | RM | 154 | PB293835/AS |
| 10550-A | 119-53-9 | Benzoin | C50011 | FEED | RM | 204 | PB30/217953 |
| 10453-G | 95-14-7 | 1H-Benzotriazole | C03521 | FEED | RM | 88 | PB285202/AS |
|  | 154-93-8 | 1,3-Bis(Chloroethyl)-1-Nitrosourea | C04773 | IP/IJ | RM | a | JOURNAL ART |
| 10523-N | 108-60-1 | Bis(2-Chloro-1-Methylethyl) Ether | C50044A | GAV | RM | 191 | PB299741/AS |
| 10575-K | 128-37-0 | Butylated Hydroxytoluene (BHT) | C03598 | FEED | RM | 150 | PB298539/AS |
| 10606-P | 156-62-7 | Calcium Cyanamide | C02937 | FEED | RM | 163 | PB293625/AS |
| 10505-F | 105-60-2 | Caprolactam | C50646 | FEED | RM | 214 | PB82109158 |
|  | 133-06-2 | Captan | C00077 | FEED | RM | 15 | PB273475/AS |
| 10408-L | 77-65-6 | Carbromal | C03805 | FEED | RM | 173 | PB290130/AS |
| 10823-E | 133-90-4 | Chloramben | C00055 | FEED | RM | 25 | PB273065/AS |
| 10853-R | 305-03-3 | Chlorambucil | C03485 | IP/IJ | RM | a | JOURNAL ART |
| 10849-T | 12789-03-6 | Chlordane | C00099 | FEED | RM | 8 | PB271977/AS |

a "Cancer", 1977, Vol. 40 pp 1935-1949.
** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

## REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10097-H | 143-50-0 | Chlordecone | C00191 | FEED | RM | b | PB264041/AS |
| 10592-P | 140-49-8 | 4'-(Chloroacetyl)-Acetanilide | C03770 | FEED | RM | 177 | PB288754/AS |
| 10190-P | 106-47-8 | p-Chloroaniline | C02039A | FEED | RM | 189 | PB295896/AS |
| 10088-E | 510-15-6 | Chlorobenzilate | C00408 | FEED | RM | 75 | PB287123/AS |
| 10669-Y | 999-81-5 | (2-Chloroethyl) Trimethylammonium Chlori | C02960 | FEED | RM | 158 | PB293627/AS |
| 10384-E | 67-66-3 | Chloroform | C02686 | GAV | RM | c | PB264018/AS |
| 10738-C | 6959-47-3 | 2-(Chloromethyl)Pyridine Hydrochloride | C03907 | GAV | RM | 178 | PB295895/AS |
| 10739-F | 6959-48-4 | 3-(Chloromethyl)Pyridine Hydrochloride | C03838 | GAV | RM | 95 | PB287125/AS |
| 10728-T | 5131-60-2 | 4-Chloro-m-Phenylenediamine | C03305 | FEED | RM | 85 | PB285201/AS |
| 10892-F | 95-83-0 | 4-Chloro-o-Phenylenediamine | C03292 | FEED | RM | 63 | PB283362/AS |
| 10801-F | 61702-44-1 | 2-Chloro-p-Phenylenediamine Sulfate | C03316 | FEED | RM | 113 | PB286370/AS |
| 10348-P | 76-06-2 | Chloropicrin | C00533 | GAV | RM | 65 | PB282311/AS |
| 10692-V | 1897-45-6 | Chlorothalonil | C00102 | FEED | RM | 41 | PB286369/AS |
| 10720-L | 3165-93-3 | 4-Chloro-o-Toluidine Hydrochloride | C02368 | FEED | RM | 165 | PB295864/AS |
| 10462-K | 95-79-4 | 5-Chloro-o-Toluidine | C02051 | FEED | RM | 187 | PB291468/AS |
| 10460-D | 95-74-9 | 3-Chloro-p-Toluidine | C02040 | FEED | RM | 145 | PB287401/AS |
| 10847-K | 94-20-2 | Chlorpropamide | C01752 | FEED | RM | 45 | PB275178/AS |
| 10886-N | 1937-37-7 | C.I. Direct Black 38 | C54557 | FEED | RM | 108 | PB280204/AS |

b NCI Brief Communication
c No TR No. Assigned
** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

## REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10883-C | 2602-46-2 | C.I. Direct Blue 6 | C54579A | FEED | RM | 108 | PB280204/AS |
| 10882-X | 16071-86-6 | C.I. Direct Brown 95 | C54568 | FEED | RM | 108 | PB280204/AS |
| 10426-V | 87-29-6 | Cinnamyl Anthranilate | C03510 | FEED | RM | 196 | PB81/143141 |
| 10576-P | 128-66-5 | C.I. Vat Yellow 4 | C03565 | FEED | RM | 134 | PB288821/AS |
| 10682-L | 1420-04-8 | Clonitralid | C00431 | FEED | RM | 91 | PB287124/AS |
| 10366-W | 56-72-4 | Coumaphos | C08662 | FEED | RM | 96 | PB290305/AS |
| 10494-S | 102-50-1 | m-Cresidine | C02993 | GAV | RM | 105 | PB286188/AS |
| 10556-Y | 120-71-8 | p-Cresidine | C02982 | FEED | RM | 142 | PB295835/AS |
| 10585-T | 135-20-6 | Cupferron | C03258 | FEED | RM | 100 | PB287409/AS |
| 10351-T | 50-18-0 | Cyclophosphamide | C04900 | IP/IJ | RM | a | JOURNAL ART |
| 10843-V | 147-94-4 | Cytarabine | C04728 | IP/IJ | RM | a | JOURNAL ART |
| 10778-H | 21739-91-3 | Cytembena | C50737 | IP/IJ | RM | 207 | PB82/163312 |
| 10842-R | 4465-94-5 | Cytoxyl Alcohol | C04922 | IP/IJ | RM | a | JOURNAL ART |
| 10840-H | 4342-03-4 | Dacarbazine | C04717 | IP/IJ | RM | a | JOURNAL ART |
| 10890-X | 80-08-0 | Dapsone | C01718 | FEED | RM | 20 | PB274394/AS |
|  | 20830-81-3 | Daunomycin | C04693 | IP/IJ | RM | a | JOURNAL ART |
| 10789-V | 33857-26-0 | DCDD(2,7-Dichlorodibenzo-p-Dioxin) | C03667B | FEED | RM | 123 | PB290570/AS |
| 10945-H | 53-19-0 | o,p'-DDD(o,p'-dichlorodiphenyldichloroet | C04933 | IP/IJ | RM | a | JOURNAL ART |

a "Cancer", 1977, Vol. 40 pp 1935-1949.

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

### National Toxicology Program
### Carcinogenesis Testing Program

### REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10393-H | 72-55-9 | p,p'-DDE(p,p'-dichlorodiphenyldichloroet | C00555 | FEED | RM | 131 | PB286367/AS |
| 10352-X | 50-29-3 | DDT(p,p'-dichlorodiphenyltrichloroethane | C00464 | FEED | RM | 131 | PB286367/AS |
| 10792-A | 39156-41-7 | 2.4-Diaminoanisole Sulfate | C01989 | FEED | RM | 84 | PB279940/AS |
| 10463-P | 95-80-7 | 2,4-Diaminotoluene | C02302 | FEED | RM | 162 | PB293593/AS |
| 10685-Y | 1596-84-5 | Diaminozide | C03827 | FEED | RM | 83 | PB285073/AS |
| 10839-K | 6358-85-6 | Diarylanilide Yellow | C03269 | FEED | RM | 30 | PB278272/AS |
| 10611-D | 333-41-5 | Diazinon | C08673 | FEED | RM | 137 | PB293889/AS |
| 10607-T | 262-12-4 | Dibenzo-p-Dioxin | C03656A | FEED | RM | 122 | PB288475/AS |
| 10465-X | 96-12-8 | Dibromochloropropane | C00500A | GAV | RM | 28 | PB277472/AS |
| 10838-G | 10318-26-0 | Dibromodulcitol | C04795 | IP/IJ | RM | a | JOURNAL ART |
| 10513-F | 106-93-4 | 1,2-Dibromoethane | C00522A | GAV | RM | 86 | PB288428/AS |
| 10837-D | 488-41-5 | Dibromomannitol | C04762 | IP/IJ | RM | a | JOURNAL ART |
| 10670-W | 1067-33-0 | Dibutyltin Diacetate | C02028 | FEED | RM | 183 | PB291567/AS |
|  | 75-34-3 | 1,1-Dichloroethane | C04535 | GAV | RM | 66 | PB283345/AS |
| 13962-L | 107-06-2 | 1,2-Dichloroethane | C00511 | GAV | RM | 55 | PB285968/AS |
| 10836-Y | 528-74-5 | Dichloromethotrexate | C04875 | IP/IJ | RM | a | JOURNAL ART |
| 10017-V | 62-73-7 | Dichlorvos | C00113A | FEED | RM | 10 | PB270937/AS |
| 10835-V | 115-32-2 | Dicofol | C00486 | FEED | RM | 90 | PB286206/AS |

a "Cancer", 1977, Vol. 40 pp 1935-1949.

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

## REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10673-H | 1212-29-9 | N,N'-Dicyclohexylthiourea | C04524 | FEED | RM | 56 | PB281539/AS |
| 10834-R | 60-57-1 | Dieldrin | C00124A | FEED | RM | 21 | PB275666/AS |
| 10834-R | 60-57-1 | Dieldrin | C00124B | FEED | R | 22 | PB275676/AS |
| 10497-E | 103-23-1 | Di(2-Ethylhexyl)Adipate | C54386 | FEED | RM | 212 | PB82109166 |
| 10503-X | 105-55-5 | N,N'-Diethylthiourea | C03816 | FEED | RM | 149 | PB288626/AS |
| 10888-W | 60-51-5 | Dimethoate | C00135 | FEED | RM | 4 | PB264367/AS |
| 10797-V | 54150-69-5 | 2,4-Dimethoxyaniline Hydrochloride | C02255 | FEED | RM | 171 | PB288625/AS |
| 10115-S | 91-93-0 | 3,3'-Dimethoxybenzidine-4, 4'-Diisocyana | C02175 | FEED | RM | 128 | PB290154/AS |
| 10553-L | 120-61-6 | Dimethyl Terephthalate | C50055 | FEED | RM | 121 | PB299903/AS |
| 10558-G | 121-14-2 | 2,4-Dinitrotoluene | C01865 | FEED | RM | 54 | PB280990/AS |
| 10568-P | 123-91-1 | 1,4-Dioxane | C03689B | WATER | RM | 80 | PB285711/AS |
| 10411-S | 78-34-2 | Dioxathion | C00395 | FEED | RM | 125 | PB286185/AS |
| 10905-C | 142-46-1 | 2,5-Dithiobiurea | C03009 | FEED | RM | 132 | PB291534/AS |
|  | 150-38-9 | EDTA (Trisodium Ethylenediamine tetracet | C03974 | FEED | RM | 11 | PB270938/AS |
|  | 483-18-1 | Emetine | C01605 | IP/IJ | RM | 43 | PB278891/AS |
| 10879-S | 115-29-7 | Endosulfan | C00566 | FEED | RM | 62 | PB281731/AS |
| 10391-A | 72-20-8 | Endrin | C00157 | FEED | RM | 12 | PB288461/AS |
|  | 22966-79-6 | Estradiol Mustard | C01570 | GAV | RM | 59 | PB285787/AS |

* New to this table since last report
** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

### National Toxicology Program
### Carcinogenesis Testing Program

### REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| | 536-33-4 | Ethionamide | C01694 | FEED | RM | 46 | PB285193/AS |
| 10394-L | 72-56-0 | p,p-Ethyl DDD (Perthane) | C02868 | FEED | RM | 156 | PB290582/AS |
| 10777-E | 20941-65-5 | Ethyl Tellurac | C02857 | FEED | RM | 152 | PB298513/AS |
| 10714-V | 2783-94-0 | FD&C Yellow 6 | C53907 | FEED | RM | 208 | PB82117433 |
| 10362-F | 55-38-9 | Fenthion | C08651 | FEED | RM | 103 | PB293832/AS |
| 10697-P | 2164-17-2 | Fluometuron | C08695 | FEED | RM | 195 | PB80/217904 |
| 10593-T | 140-56-7 | Formulated Fenaminosulf | C03010 | FEED | RM | 101 | PB287443/AS |
| 10876-F | 1455-77-2 | Guanazole | C04819 | IP/IJ | RM | a | JOURNAL ART |
| 10875-C | 76-44-8 | Heptachlor | C00180 | FEED | RM | 9 | PB271967/AS |
| 10790-S | 57653-85-7 | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | C03703A | GAV | RM | 198 | PB80/124844 |
| 10790-S | 57653-85-7 | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | C03703B | SP | M | 202 | PB80/124836 |
| 10125-E | 67-72-1 | Hexachloroethane | C04604A | GAV | RM | 68 | PB282668/AS |
| 10387-R | 70-30-4 | Hexachlorophene | C02653 | FEED | R | 40 | PB279525/AS |
| 10872-P | 122-66-7 | Hydrazobenzene | C01854 | FEED | RM | 92 | PB285791/AS |
| 10871-K | 127-07-1 | Hydroxyurea | C04831 | IP/IJ | RM | a | JOURNAL ART |
| | 21416-87-5 | ICRF-159(bis-4,4'-(1-methyl-1,2-ethanedi | C01627 | IP/IJ | RM | 78 | PB285853/AS |
| 10338-D | 75-47-8 | Iodoform | C04568 | GAV | RM | 110 | PB286344/AS |
| | 3458-22-8 | IPD (3,3'-Iminobis-1-Propanol Dimethylsu | C01547 | IP/IJ | RM | 18 | PB277455/AS |

---

a "Cancer", 1977, Vol. 40 pp 1935-1949.
a "Cancer", 1977, Vol. 40 pp 1945-1949.
** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

## REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
|  | 3778-73-2 | Isophosphamide | C01638 | IP/IJ | RM | 32 | PB275677/AS |
| 10868-F | 303-34-4 | Lasiocarpine | C01478 | FEED | R | 39 | PB278641/AS |
| 10772-J | 19010-66-3 | Lead Dimethyldithiocarbamate | C02891 | FEED | RM | 151 | PB298512/AS |
| 10865-T | 58-89-9 | Lindane | C00204 | FEED | RM | 14 | PB273480/AS |
| 10617-C | 434-13-9 | Lithocholic Acid | C03861 | GAV | RM | 175 | PB288476/AS |
| 10753-X | 9000-40-2 | Locust Bean Gum | C50419 | FEED | RM | 221 | PB82163320 |
|  | 13010-47-4 | Lomustine | C04740 | IP/IJ | RM | a | JOURNAL ART |
| 10686-D | 1634-78-2 | Malaoxon | C08628 | FEED | RM | 135 | PB299858/AS |
| 10563-V | 121-75-5 | Malathion | C00215A | FEED | RM | 24 | PB278527/AS |
| 10563-V | 121-75-5 | Malathion | C00215B | FEED | R | 192 | PB300301/AS |
| 11171-J | 148-82-3 | Melphalan | C04853 | IP/IJ | RM | a | JOURNAL ART |
| 10767-W | 15356-70-4 | dl-Menthol | C50000 | FEED | RM | 98 | PB288761/AS |
|  | 50-44-2 | 6-Mercaptopurine | C04886 | IP/IJ | RM | a | JOURNAL ART |
|  | 531-76-0 | Merphalan | C04944 | IP/IJ | RM | a | JOURNAL ART |
|  | 59-05-2 | Methotrexate | C04671 | IP/IJ | RM | a | JOURNAL ART |
| 10863-K | 72-43-5 | Methoxychlor | C00497 | FEED | RM | 35 | PB278271/AS |
|  | 13909-09-6 | Methyl CCNU(1-nitrosourea-1-(2-chloroeth | C04955 | IP/IJ | RM | a | JOURNAL ART |
| 10487-W | 101-61-1 | 4,4'-Methylenebis(N,N-Dimethyl)Benzenami | C01990 | FEED | RM | 186 | PB299856/AS |

a "Cancer", 1977, Vol. 40 pp 1935-1949.

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

## REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
|  | 342-69-8 | @6-Methylmercaptopurine Ribonucleoside | C04784 | IP/IJ | RM | a | JOURNAL ART |
| 10910-P | 129-15-7 | @2-Methyl-1-Nitroanthraquinone | C01923A | FEED | R | 29 | PB277439/AS |
| 10910-P | 129-15-7 | @2-Methyl-1-Nitroanthraquinone | C01923B | FEED | M | d | JOURNAL ART |
| 10608-X | 298-00-0 | @Methyl Parathion | C02971 | FEED | RM | 157 | PB295891/AS |
| 10610-Y | 315-18-4 | @Mexacarbate | C00544 | FEED | RM | 147 | PB287471/AS |
| 10440-L | 90-94-8 | @Michler's Ketone | C02006 | FEED | RM | 181 | PB299855/AS |
|  | 50-07-7 | @Mitomycin C | C04706 | IP/IJ | RM | a | JOURNAL ART |
| 10698-T | 2243-62-1 | @1,5-Naphthalenediamine | C03021 | FEED | RM | 143 | PB287646/AS |
| 10683-R | 1465-25-4 | @N-(1-Naphthyl)Ethylenediamine.2HCl | C03281 | FEED | RM | 168 | PB289733/AS |
| 10853-D | 139-94-6 | @Nithiazide | C03792 | FEED | RM | 146 | PB295897/AS |
| 10644-N | 602-87-9 | @5-Nitroacenaphthene | C01967 | FEED | RM | 118 | PB287347/AS |
| 10689-P | 1777-84-0 | @3'-Nitro-p-Acetophenetide | C01978 | FEED | RM | 133 | PB299857/AS |
| 10477-N | 99-59-2 | @5-Nitro-o-Anisidine | C01934 | FEED | RM | 127 | PB287411/AS |
| 10649-H | 619-17-0 | @4-Nitroanthranilic Acid | C01945 | FEED | RM | 109 | PB286942/AS |
| 10449-X | 94-52-0 | @6-Nitrobenzimidazole | C01912 | FEED | RM | 117 | PB293834/AS |
| 10691-R | 1836-75-5 | @Nitrofen | C00420A | FEED | RM | 184 | PB296038/AS |
| 10691-R | 1836-75-5 | @Nitrofen | C00420B | FEED | RM | 26 | PB277440/AS |
| 10425-R | 86-57-7 | @1-Nitronaphthalene | C01956 | FEED | RM | 64 | PB282311/AS |

a "Cancer", 1977, Vol. 40 pp 1935-1949.
d A. S. Krishna Murthy et al., "Int. J. Cancer: 19", 117-121 (1977)
** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

## National Toxicology Program
## Carcinogenesis Testing Program

## REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10476-J | 99-56-9 | 4-Nitro-o-Phenylenediamine | C03941 | FEED | RM | 180 | PB290306/AS |
| 10730-V | 5307-14-2 | 2-Nitro-p-Phenylenediamine | C02222 | FEED | RM | 169 | PB290304/AS |
| 10620-G | 504-88-1 | 3-Nitropropionic Acid | C03076 | GAV | RM | 52 | PB281102/AS |
| 10143-H | 1116-54-7 | N-Nitrosodiethanolamine | C55583 | WATER | RM | c | |
| 10423-H | 86-30-6 | N-Nitrosodiphenylamine | C02880 | FEED | RM | 164 | PB298275/AS |
| 10605-K | 156-10-5 | P-Nitrosodiphenylamine | C02244 | FEED | RM | 196 | PB291500/AS |
| 10363-J | 102-96-5 | Beta-Nitrostyrene and Styrene | C02211 | GAV | RM | 170 | PB300949/AS |
| 10475-F | 99-55-8 | 5-Nitro-o-Toluidine | C01843 | FEED | RM | 107 | PB285872/AS |
| | 139-13-9 | NTA(Nitrilotriacetic Acid) | C02766 | FEED | RM | 6 | PB266177/AS |
| 10771-F | 18662-53-8 | NTA (Nitrilotriacetic Acid Trisodium Sal | C01445B | FEED | RM | 6 | PB266177/AS |
| 10771-F | 18662-53-8 | NTA (Nitrilotriacetic Acid Trisodium Sal | C01445A | FEED | R | 6 | PB266177/AS |
| 10490-C | 101-80-4 | 4,4'-Oxydianiline | C50146 | FEED | RM | 205 | PB80/217938 |
| 10942-W | 56-38-2 | Parathion | C00226 | FEED | RM | 70 | PB288803/AS |
| 10033-V | 82-68-8 | Pentachloronitrobenzene | C00419A | FEED | RM | 61 | PB281732/AS |
| 10587-C | 136-40-3 | Phenazopyridine Hydrochloride | C01672 | FEED | RM | 99 | PB286207/AS |
| 10940-N | 3546-10-9 | Phenesterin | C01558 | GAV | RM | 60 | PB283361/AS |
| 10939-R | 114-86-3 | Phenformin | C01741 | FEED | RM | 7 | PB266176/AS |
| 10076-N | 108-95-2 | Phenol | C50124 | WATER | RM | 203 | PB80/217946 |

c No TR No. Assigned
** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

## REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10938-L | 63-92-3 | Phenoxybenzamine Hydrochloride | C01661 | IP/IJ | RM | 72 | PB285095/AS |
| 10650-F | 624-18-0 | p-Phenylenediamine Dihydrochloride | C03930 | FEED | RM | 174 | PB290124/AS |
| 10434-V | 89-25-8 | 1-Phenyl-3-Methyl-5-Pyrazolone | C03952 | FEED | RM | 141 | PB287122/AS |
| 10855-K | 101-54-2 | N-Phenyl-p-Phenylenediamine | C02233 | FEED | RM | 82 | PB285856/AS |
| 10500-K | 103-85-5 | 1-Phenyl-2-Thiourea | C02017 | FEED | RM | 148 | PB287357/AS |
| 10763-F | 13171-21-6 | Phosphamidon | C00588 | FEED | RM | 16 | PB288800/AS |
| 10937-H | 13366-73-9 | Photodieldrin | C00599 | FEED | RM | 17 | PB274393/AS |
| 10433-R | 88-96-0 | Phthalamide | C03612 | FEED | RM | 161 | PB293831/AS |
| 10421-A | 85-44-9 | Phthalic Anhydride | C03601 | FEED | RM | 159 | PB293594/AS |
| 10155-Y | 1918-02-1 | Picloram | C00237A | FEED | RM | 23 | PB276471/AS |
| 10358-W | 51-03-6 | Piperonyl Butoxide | C02813 | FEED | RM | 120 | PB288753/AS |
| 10554-R | 120-62-7 | Piperonyl Sulfoxide | C02824 | FEED | RM | 124 | PB288778/AS |
| 10694-D | 1955-45-9 | Pivalolactone | C04126 | GAV | RM | 140 | PB287645/AS |
| 10936-E | 53-03-2 | Prednisone | C04897 | IP/IJ | RM | a | JOURNAL ART |
| 10612-G | 366-70-1 | Procarbazine | C01810A | IP/IJ | RM | a | JOURNAL ART |
| 10612-G | 366-70-1 | Procarbazine | C01810B | IP/IJ | RM | 19 | PB299902/AS |
| 10666-L | 952-23-8 | Proflavine | C04137 | FEED | RM | 5 | PB268553/AS |
| 10916-N | 98-96-4 | Pyrazinamide | C01785 | FEED | RM | 48 | PB280251/AS |

a "Cancer", 1977, Vol. 40 pp 1935-1949.

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

## National Toxicology Program
## Carcinogenesis Tasting Program

### REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10904-X | 58-14-0 | Pyrimethamine | C01683 | FEED | RM | 77 | PB282608/AS |
| 10502-T | 105-11-3 | p-Quinone Dioxime | C03850 | FEED | RM | 179 | PB291501/AS |
| 10355-J | 50-55-5 | Reserpine | C50157 | FEED | RM | 193 | PB80/217920 |
| 10745-X | 7446-34-6 | Selenium Sulfide | C50033A | GAV | RM | 194 | |
| 10745-X | 7446-34-6 | Selenium Sulfide | C50033B | SP | M | 197 | |
| 10808-H | NOCAS0482 | Selsun | C54546 | SP | M | 199 | |
| 10597-J | 148-18-5 | Sodium Diethyldithiocarbamate | C02835 | FEED | RM | 172 | PB293833/AS |
| 11244-D | 18883-66-4 | Streptozoticin | C03167 | IP/IJ | RM | a | JOURNAL ART |
| 10166-K | 100-42-5 | Styrene | C02200 | GAV | RM | 185 | PB300977/AS |
| 10452-D | 95-06-7 | Sulfallate | C00453 | FEED | RM | 115 | PB286386/AS |
| 10574-G | 127-69-5 | Sulfisoxazole | C50022 | GAV | RM | 138 | PB288779/AS |
| 10898-E | 77-79-2 | 3-Sulfolene | C04557 | GAV | RM | 102 | PB284656/AS |
| 10392-E | 72-54-8 | TDE(Tetrachlorodiphenylethane) | C00475 | FEED | RM | 131 | PB286367/AS |
| 10157-G | 1746-01-6 | 2,3,7,8 Tetrachloro-di-benzo-Dioxin | C03714B | SP | M | 201 | PB82163684 |
| 10915-J | 79-34-5 | 1,1,2,2-Tetrachloroethane | C03554 | GAV | RM | 27 | PB277453/AS |
| 10176-T | 127-18-4 | Tetrachloroethylene | C04580A | GAV | RM | 13 | PB272940/AS |
| 10705-R | 2438-88-2 | 2,3,5,6-Tetrachloro-4-Nitroanisole | C03032 | FEED | RM | 114 | PB287642/AS |
| 10929-H | 961-11-5 | Tetrachlorvinphos | C00168 | FEED | RM | 33 | PB278650/AS |

a "Cancer", 1977, Vol. 40 pp 1935-1949.

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/ NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| 10291-V | 97-77-8 | Tetraethylthiuram Disulfide | C02959 | FEED | RM | 166 | PB298514/AS |
| | 789-61-7 | Beta-TGDR(Beta-Thioguanidine deoxyribosi | C01581 | IP/IJ | RM | 57 | PB281540/AS |
| | 139-65-1 | 4,4'-Thiodianiline | C01707 | FEED | RM | 47 | PB280360/AS |
| 11109-K | 52-24-4 | Thio-TEPA(Triethylenethiophosphorotriami | C01649 | IP/IJ | RM | 58 | PB285702/AS |
| 10173-G | 13463-67-7 | Titanium Dioxide | C04240 | FEED | RM | 97 | PB288780/AS |
| 10928-E | 1156-19-0 | Tolazamide | C03327 | FEED | RM | 51 | PB284610/AS |
| 10927-A | 64-77-7 | Tolbutamide | C01763 | FEED | RM | 31 | PB274483/AS |
| 10768-A | 15481-70-6 | 2,6-Toluenediamine Dihydrochloride | C50317 | FEED | RM | 200 | PB80/217912 |
| 10736-T | 6369-59-1 | 2,5-Toluenediamine Sulfate | C01832 | FEED | RM | 126 | PB287127/AS |
| 10654-W | 636-21-5 | o-Toluidine Hydrochloride | C02335 | FEED | RM | 153 | PB290908/AS |
| 10926-W | 8001-35-2 | Toxaphene | C00259 | FEED | RM | 37 | PB292290/AS |
| 10390-W | 71-55-6 | 1,1,1-Trichloroethane | C04626A | GAV | RM | 3 | PB265082/AS |
| | 79-00-5 | 1,1,2-Trichloroethane | C04579 | GAV | RM | 74 | PB283337/AS |
| 10175-P | 79-01-6 | Trichloroethylene | C04546A | GAV | RM | 2 | PB264122/AS |
| 10925-S | 75-69-4 | Trichlorofluoromethane | C04637 | GAV | RM | 106 | PB286187/AS |
| 10430-E | 88-06-2 | 2,4,6-Trichlorophenol | C02904 | FEED | RM | 155 | PB293770/AS |
| 10924-N | 1582-09-8 | Trifluralin | C00442 | FEED | RM | 34 | PB278610/AS |
| 10589-J | 137-17-7 | 2,4,5-Trimethylaniline | C02299 | FEED | RM | 160 | PB293802/AS |

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650

National Toxicology Program
Carcinogenesis Testing Program

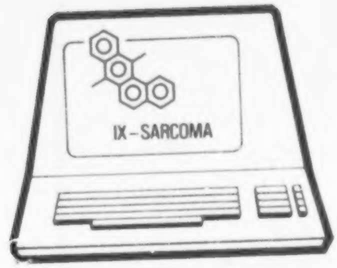
REPORTS AVAILABLE AT NTIS

| NTP NUMBER | PRIMARY CAS NUMBER | CHEMICAL NAME | NCI NUMBER | ROUTE | SPEC | NCI/NTP TR NO | NTIS NUMBER** |
|---|---|---|---|---|---|---|---|
| | 512-56-1 | [a]Trimethylphosphate | C03781 | FEED | RM | 81 | PB285851/AS |
| 10708-D | 2489-77-2 | [a]Trimethylthiourea | C02186 | FEED | RM | 129 | PB288802/AS |
| 10406-E | 76-87-9 | [a]Triphenyltin Hydroxide | C00260 | FEED | RM | 139 | PB287645/AS |
| 10571-V | 126-72-7 | [a]Tris (2,3-Dibromopropyl) Phosphate | C03270 | FEED | RM | 76 | PB280271/AS |
| 10395-R | 73-22-3 | [a]l-Tryptophan | C01729 | FEED | RM | 71 | PB285792/AS |
| | 66-75-1 | [a]Uracil Mustard | C04820 | IP/IJ | RM | [a] | JOURNAL ART |
| | 865-21-4 | [a]Vinblastine | C04842 | IP/IJ | RM | [a] | JOURNAL ART |
| | 57-22-7 | [a]Vincristine | C04864 | IP/IJ | RM | [a] | JOURNAL ART |

---

[a] "Cancer", 1977, Vol. 40 pp 1935-1949.

** The NCI and the NTP Technical Reports are available from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; Tele: (703) 557-4650



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# TDB
TOXICOLOGY DATA BANK

# CONDENSED

Bethesda, Maryland 20209

**TDB DEFINED**

The Toxicology Data Bank (TDB) is an online, interactive file containing chemical, pharmacological, and toxicological data extracted from textbooks, handbooks, criteria documents, and monographs. The file is created by the Specialized Information Services (SIS) in collaboration with Oak Ridge National Laboratory (ORNL). It is made available through the National Library of Medicine's online service, the Medical Literature Analysis and Retrieval System (MEDLARS). TDB contains data and information on about 3000 compounds. Data in TDB have been reviewed by a peer group of scientists.

Information in TDB is organized around each chemical substance with records composed of approximately 60 different data elements. The elements are grouped into eight categories which include chemical, physical, biological, pharmacological, toxicological, and environmental information.

**TDB ACCESSED**

TDB is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone lines or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

**TDB SEARCHED**

TDB is primarily searched using free text terms. The human and animal/non-human toxicity excerpts have been indexed with TOXMeSH vocabulary. The user can search TDB for a particular chemical record by entering the TDB number, CAS Registry Number, or a substance name. The user can also search TDB for information on a group of compounds, or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected information reported for a given substance.

**TDB AVAILABILITY**

TDB is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 9:00 P.M. (Eastern Time).

**TDB COST**

The cost of access to the TDB file is $22 per hour during prime time (10:00 a.m. to 5:00 p.m.), and $15 per hour at non-prime times. There is a charge of $0.15 per page for offline printout.

**TDB USER SERVICES**

For Online Systems services including access to the TDB file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For TDB content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–1131

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

---

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

---

## Journal Articles

Harrison, B.R. Developing guidelines for working with antineoplastic drugs.
*Am J Hosp Pharm 38*, 1686-93, 1981.

> The antineoplastic drugs are potentially hazardous and standards need to be set for problems associated with the admixture and injection of these substances. The literature on the subject is reviewed and the necessity of local guidelines emphasized.

Van Hoof, F. and Van San, M. Analysis of copper, zinc, cadmium and chromium in fish tissues. A tool for detecting metal-caused fish kills. *Chemosphere 10*, 1127-35, 1981.

In fish killed by toxic metals in a Belgian river, the concentration of metal in the gills was the most valuable indicator of lethal exposure. The authors point out that metal levels in gills and other tissues afford important information on the cause of the kill when combined with background information on metal levels in the water and normal levels in the tissues of the fish.

Alston, R.L. A batch staining method for brain slices allowing volume measurements of grey and white matter using an image analyzer (Guantimet 720).
*Stain Technol 56*, 207-13, 1981.

The analysis of the toxic effects of many compounds that act as demyelinating agents in the central nervous system depends upon the quantification of the loss of myelin. Therefore a rapid and comparatively simple method of demonstrating and quantifying the demyelination is a valuable tool in toxicology.

Sears, B., Yesair, D.W. Xenobiotic delivery vehicles and method of using them.
*U.S. PATENT NO. 4298594* 11/03/81 (Arthur D. Little Inc.)

The authors recommend the use of microreservoirs formed by phospholipids or cholesteryl esters with fatty acids or triglycerides. Their stability is greater than that of liposomes often used for the same purpose. Experimental data demonstrated that material delivered via such vehicles was less toxic than that injected directly. The material in the microreservoir was maintained longer in the blood stream and hence had less opportunity to injure liver, kidney, heart etc.

Sansone, E.B. et al. Assessment of environmental contamination associated with mammalian cell transformation assay.
*In Vitro*, 17, 810-5, 1981.

Sodium fluorescein, a fluorescent material judged to be noncarcinogenic, was dissolved in the culture media used to maintain early passage hamster embryo cells. The standard procedures of assay were followed. These procedures demonstrated that almost all, 99%, of contamination could be recovered from the inside of the glove box, the hood and disposable materials. The remaining 1% was traceable to intralaboratory transport of the chemical, treated cultures, and contaminated equipment. Present methods were therefore judged adequate for worker protection.

Frolova, A.D. et al. Use of indices of behavioral responses in a toxicological experiment.
*GIG SANIT O*, 53-57, 1980.

Two methods were compared (a modified open field method and the summation-threshold index registration method) to study the effects of organic and inorganic industrial chemicals. The simultaneous use of the two tests broadened the chance of detecting specific effects of a substance. A stimulating effect of the substance increases the sensitivity of the tests. On the other hand, in the absence of a narcotic effect, the open field method using the burrowing effect proved to be a sensitive index of a general toxic effect. This combination of tests can be of especial value during the establishment of threshold doses.

Wessely, P. and Mayr, N. EEG in phenytoin intoxication (author's translation.
*EEG EMG 12*, 142-7, 1981.

The possibility that the EEG can be used to identify and to follow the course of toxic conditions affecting the brain has been explored in four cases of phenytoin intoxication. The results of this study suggest that EEG studies would be of interest and might help in diagnosis of patients.

Merkur'eva, R.V. et al. Enzymatic disorganization of various subcellular structures under the effects of general toxicity and gonadotoxicity of chemical environmental factors.
*ZDRAVOOKHR BELORUSS O*, 28-29, 1980.

Induced toxic effects and gonadotoxic effects of chloroprene and Cr. Chloroprene were compared for their effects on lysosomes, endoplasmic reticulum, mitochondria, and cytosol, as well as on the state of body fluids. "The severity of the disturbances depended on intensity and length of exposure." There was a direct correlation between the activity of beta galactosidase and the functional state of the spermatozoa. The authors recommend the use of tests in the gonads and of the seminal fluid as early indicators of a gonadotoxic effect accompanied by analyses of blood serum as indicators of a general hepatotoxic effect.

Mechanisms of toxicity and hazard evaluation. Proceedings of the Second International Congress on Toxicology. Brussels, Belgium, July 6-11, 1980. *Dev Toxicol Environ Sci 8*, 1-665, 1980.

The proceedings contain the following papers of interest. Unfortunately, no abstracts are available, but the proceedings are available at the National Library of Medicine.

Davies, J.C. Regulatory issues in toxic substances control legislation.
*Dev Toxicol Environ Sci 8*, 428-39, 1980.

Astill, B.D. et al. Tier testing systems in toxicology and decision-making criteria for their use.
*Dev Toxicol Environ Sci 8*, 441-52, 1980.

Noel, P.R. Toxicity testing, hazard assessment and data quality assurance for chemical regulatory purposes.
*Dev Toxicol Environ Sci 8*, 453-69, 1980.

Somers, E. The International Programme on Chemical Safety.
*Dev Toxicol Environ Sci 8*, 465-72, 1980.

Van Der Venne, M.T. et al. Toxicological aspects of European community legislation regarding new chemicals.
*Dev Toxicol Environ Sci 8*, 473-8, 1980.

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
Chemical Industry Institute of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
Risk Assessment Study of Dimethylamine

INVESTIGATOR(S):
Craig S. Barrow, Ph.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Inhalation Toxicologist

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Chemical Industry Institute
of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP:
Start Date: April 1981
End Date: April 1983
Annual Funding:

PROJECT SUMMARY:

The objective of this study is to establish the relative risk associated with chronic inhalation of dimethylamine. Two strains of animals, the Fischer 344 rat and the B6C3F1 mouse, are used. Three groups of animals, 95/sex/strain/concentration, are exposed to concentrations of 10, 50, or 175 ppm dimethylamine for 6 hours per day, 5 days per week for 24 months. A control group is exposed to clean air only on the same exposure regimen.

Interim evaluations are planned at six, twelve, and 18 month intervals, with final sacrifice of all remaining animals at 24 months. Evaluations for risk assessment include daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Dimethylamine 124-40-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Koch F ; Mehlhorn G ; Kliche R ; Lang R
Studies on the aerogenic intoxication of rats by means of methylamines
Wiss. Z. - Karl-Marx-Univ. Leipzig, Math.-Naturwiss. Reihe; VOL 29, ISS 5, 1980,463-74

Mitchell R ; Gralla E
INHALATION STUDY OF DIMETHYLAMINE GAS
Toxicology Research Projects Directory, Vol.04 iss.04 1979

Iqbal ZM ; Dahl K ; Epstein SS
Biosynthesis of dimethylnitrosamine in dimethylamine-treated mice after exposure to nitrogen dioxide
JNCI, J. Natl. Cancer Inst.; VOL 67, ISS 1, 1981,137-41

Varadarajan S
Safe handling and transportation of methylamines
Man-Made Text. India; VOL 23, ISS 10, 1980,522-5

Bittersohl G ; Heberer H
Results of workplace air and worker urine analyses in persons occupationally exposed to aliphatic amines
Z. Gesamte Hyg. Ihre Grenzgeb.; VOL 26, ISS 4, 1980,258-9

Rounbehler D ; Reisch J ; Coombs J
Survey for N-Nitroso Compounds at Onyx Chemical Company, Jersey City, NJ
Govt Reports Announcements & Index (GRA&I), **Issue 25, 1981**

Benemanskii VV ; Prusakov VM ; Dushutin KK
[Biological action of dimethylamine and nitrogen dioxide reaction products on animals with short-term exposures]
Gig Sanit, ISS 12, 1979, P15-9

Bittersohl G ; Heberer H
Results of workplace air and worker urine analyses in persons occupationally exposed to aliphatic amines
Z. Gesamte Hyg. Ihre Grenzgeb.; VOL 26, ISS 4, 1980,258-9

Sedov AV ; Surovtsev NA ; Mazneva GE ; Shevkun ON
Data for substantiating the maximum permissible concentration of dimethylamine in the gaseous medium of insulating facilities of individual protection
Gig. Sanit.; ISS 2, 1980,81-2

BABA T ; SAITO M ; FUKUI Y ; TANIGUCHI S ; MIZUNOYA Y
Dimethylamine in the extracts of rubber articles used in contact with foods: Hygienic chemistry of rubber articles used in contact with foods: 5.
J FOOD HYG SOC JPN; 21 (1). 1980. 32-36.

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
Chemical Industry Institute of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
Nitrobenzene: 90 day Inhalation Study in Rats and Mice

INVESTIGATOR(S):
Thomas Hamm, Jr., D.V.M., Ph.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Study Director

PERFORMING ORGANIZATION
Name and Address Including Zip Code
Chemical Industry Institute
of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP
Start Date: 1982
End Date: 1982
Annual Funding:

PROJECT SUMMARY:

The purpose of this study is to determine the effects of nitrobenzene in rats and mice when exposed by the inhalation route. Fischer 344 rats, CD rats, and B6C3F1 mice will be used. Four groups of animals, 10/sex/strain/concentration will be exposed to concentrations of 0, 5, 16, or 50 ppm nitrobenzene, 6 hours per day, 5 days per week for 90 days. At the conclusion of the study, risk assessment will be evaluated based on daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Nitrobenzene 98-95-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searchas made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Manu P
Early detection of health disturbance in occupational exposure to
various risk factors in industry, on the basis of changes
occurring in various systems or organs
Rev. Ig., Bacteriol., Virusol., Parazitol., Epidemiol.,
Pneumoftiziol., Ig.; VOL 27, ISS 3, 1978,261-72

Dichloromethane, nitrobenzene and 1,1,1-trichloroethane; proposed
test rule
Fed. Regist.; VOL 46, ISS 108, 1981,30300-20

KOPFLER FC ; MELTON RG
HUMAN EXPOSURE TO WATER POLLUTANTS
SUFFET, IRWIN H. (ED.). ADVANCES IN ENVIRONMENTAL SCIENCE AND
TECHNOLOGY VOL. 8. FATE OF POLLUTANTS IN THE AIR AND WATER
ENVIRONMENTS. PART 2. CHEMICAL AND BIOLOGICAL FATE OF POLLUTANTS
IN THE ENVIRONMENT. SYMPOSIUM AT THE 165TH NATIONAL AMERICAN
CHEMICAL SOCIETY MEETING IN THE ENVIRONMENTAL CHEMISTRY DIVISION.
PHILADELPHIA, PA., USA, APRIL 1975. XX+442P. ILLUS. MAPS. JOHN
WILEY & SONS, INC.: NEW YORK, N.Y., USA. ISBN 0-471-83539-0(PART
1); ISBN 0-471-01803-1(PART 2).; 1977 (RECD 1978) 419-433

HARRINGTON JM ; WALDRON HA
EFFECTS OF WORK EXPOSURES ON ORGAN SYSTEMS 1. LIVER KIDNEY AND
BLADDER AND SKIN
SCHILLING, R. S. F. (ED.). OCCUPATIONAL HEALTH PRACTICE, 2ND
EDITION. XVIII+630P. BUTTERWORTHS: WOBURN, MASS., USA; LONDON,
ENGLAND. ILLUS. MAPS. ISBN 0-407-33701-6.; U (0). 1981. P89-114.

KAZANINA SS
EFFECT OF MATERNAL NITROBENZENE POISONING ON MORPHOLOGY AND
HISTOCHEMISTRY OF HEMOCHORIAL PLACENTAS OF ALBINO RATS
BULL EXP BIOL MED(USSR); 65:679-681,1968
(TRANSLATED FROM BYULLETEN'EKSPERIMENTAL'NOI BIOLOGII I MEDITSINY
65:93-96,1968)

Anon
TSCA [Toxic Substances Control Act] interagency testing
committee. Initial report to the Administrator, Environmental
Protection Agency
Fed. Regist.; VOL 42, ISS 197, 1977,55026-80

Laass W ; Kupfer B
Experimental animal studies on the effect of milk in acute oral
poisoning with organic solvents. Part 2. Additional studies on
the effect on survival time
Pharmazie; VOL 34, ISS 2, 1979,114-15

Nishiuchi Y
Toxicity of pesticides to some aquatic animals. II. Toxicity of
several solvents to carp and Daphnia
Seitai Kagaku; VOL 4, ISS 3, 1981,45-7

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

Chemical Industry Institute of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

Methyl Chloride Reproduction and Fertility Study in Fischer 344 Rats

INVESTIGATOR(S):

Thomas Hamm, Jr., D.V.M., Ph.D.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Study Director

PERFORMING ORGANIZATION

Name and Address Including Zip Code:

Chemical Industry Institute
of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

PERIOD FOR THIS NRP

Start Date: 1982
End Date: 1983
Annual Funding:

PROJECT SUMMARY:

The objective of the reproduction and fertility study is to evaluate the effects of methyl chloride inhalation exposure to the male and female Fischer 344 reproductive systems and functions. This includes effects on postnatal development through three generations. The duration of the impairment, if one is found, and sexual assignment of lesion(s) (male and/or female) will also be investigated.

CAS Registry No.
Methyl chloride 74-87-3

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Repko JD ; Lasley SM
Behavioral, neurological, and toxic effects of methyl chloride: a review of the literature.
CRC Crit Rev Toxicol; VOL 6, ISS 4, 1979, P283-302 (REF: 67)

BUS JS ; WOLKOWSKI-TYL R ; BARROW C
ALTERATIONS IN MATERNAL AND FETAL NONPROTEIN SULFHYDRYL CONCENTRATIONS IN PREGNANT FISCHER 344 RATS AFTER ACUTE INHALATION EXPOSURE TO METHYL CHLORIDE
20TH ANNUAL MEETING OF THE TERATOLOGY SOCIETY, PORTSMOUTH, N.H., USA, JUNE 8-12, 1980. TERATOLOGY; 21 (2). 1980. 32A.

Anonymous
Halomethanes.
In: Priority Toxic Pollutants: Health Impacts and Allowable Limits. Sittig, M., ed. (Noyes Data Corp.: Park Ridge, NJ): pp. 227-236 1980 (28 References)

Mitchell R ; Gralla E
INHALATION STUDY OF METHYL CHLORIDE GAS
Toxicology Research Projects Directory, Vol.04 iss.04 1979

BUS JS
DISPOSITION OF CARBON-14 METHYL CHLORIDE IN FISCHER 344 RATS AFTER INHALATION EXPOSURE
PHARMACOLOGIST; 20 (3). 1978 214

SCHMID A ; JUNGBAUER C
EXPIRATION OF FOREIGN SUBSTANCES BY MICE FOLLOWING PARENTERAL LOADING WITH CHLORINATED METHANE DERIVATIVES
21ST SPRING MEETING OF THE DEUTSCHE PHARMAKOLOGISCHE GESELLSCHAFT (GERMAN PHARMACOLOGICAL SOCIETY), MAINZ, WEST GERMANY, MARCH 18-21, 1980. NAUNYN-SCHMIEDEBERG'S ARCH PHARMACOL; 311 (SUPPL.). 1980. R19.

Stewart RD ; Hake CL ; Wu A ; Graff SA ; Forster HV
Methyl chloride: development of a biologic standard for the industrial worker by breath analysis
Report; ISS NIOSH-HE/TA-79-33; Order No. PB81-167686,, 1980,158 pp.

Belanger PL
Health hazard evaluation determination report no. HE 79-31-699, University Corporation for Atmospheric Research, Mauna Loa Observatory, Hilo, Hawaii 96720
Report; ISS NIOSH-HE-79-31-699; Order No. PB81-111247,, 1980,11 pp.

KORNBRUST DJ ; BUS JS
ASSOCIATION OF INHALED CARBON-14 LABELED METHYL CHLORIDE WITH MACRO MOLECULES FROM VARIOUS RAT TISSUES
MEETING OF THE AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, ROCHESTER, MINN., USA, AUG. 17-21, 1980. PHARMACOLOGIST; 22 (3). 1980. 247.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

Chemical Industry Institute of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

90 day Vapor Inhalation Toxicity Study on *n*-Hexane in Albino Rats

| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
|---|---|
| E. J. Gralla, VMD (CIIT) | Chief of Toxicology |
| Finis L. Cavender, Ph.D. (ToxiGenics) | Study Director |

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
ToxiGenics, Inc.
1800 East Pershing Road
Decatur, Illinois 62526

PERIOD FOR THIS NRP

Start Date: August 1980
End Date: November 1980
Annual Funding:

PROJECT SUMMARY:

This study was conducted to determine the subchronic toxicity of *n*-hexane vapors when animals were exposed for 6 hours per day, 5 days per week for a minimum of 90 days. Three groups of animals, 15 males and 15 females each, were exposed to concentrations of 3000, 6500, or 10,000 ppm *n*-hexane. The control group was exposed to clean air only.

At 90 days, evaluations included daily observations, body weights, clinical chemistries, gross necropsy observations, histopathological findings, and teased nerve fiber preparations.

CAS Registry No.
*n*-Hexane 110-54-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Bus JS ; White EL ; Gillies PJ ; Barrow CS
Tissue distribution of n-hexane, methyl n-butyl ketone, and
2,5-hexanedione in rats after single or repeated inhalation
exposure to n-hexane
Drug Metab. Dispos.; VOL 9, ISS 4, 1981,386-7

SCHMIDT R ; SCHNOY M ; WAGNER HM ; ALTENKIRCH H
ULTRASTRUCTURAL STUDIES ON TOXIC EFFECTS IN LUNG TISSUE INDUCED
BY INHALATION OF SOLVENTS
2ND INTERNATIONAL CONGRESS ON TOXICOLOGY, BRUSSELS, BELGIUM, JULY
6-11, 1980. TOXICOL LETTERS (AMST); 0 (SPEC. ISSUE 1). 1980. 45.

Ono Y ; Takeuchi Y ; Hisanaga N
Studies on the method of measuring nerve conduction velocity in
rat's tail and on the comparative toxicity of n-hexane, methyl
n-butyl ketone, and 2,5-hexanedione
Sangyo Igaku; VOL 21, ISS 6, 1979,528-38

Bus JS ; White EL ; Tyl RW ; Barrow CS
Perinatal toxicity and metabolism of n-hexane in Fischer-344 rats
after inhalation exposure during gestation.
Toxicol Appl Pharmacol; VOL 51, ISS 2, 1979, P295-302

FRONTALI N ; AMANTINI MC ; SPAGNOLO A ; GUARCINI AM ; SALTARI MC
POLY NEUROPATHY IN RATS TREATED WITH THE DIFFERENT SOLVENT
COMPONENTS OF THE GLUES USED IN SHOE FACTORIES
3RD EUROPEAN NEUROSCIENCE MEETING, ROME, ITALY, SEPT. 11-14,
1979. NEUROSCI LETT; SUPPL. (3). 1979. S217.

Joergensen NK ; Cohr KH
n-Hexane and its toxicologic effects
Scand. J. Work, Environ. Health; VOL 7, ISS 3, 1981,157-68

Savolainen H ; Pfaffli P
Neurochemical effects on rats of n-heptane inhalation exposure
Arch. Environ. Contam. Toxicol.; VOL 9, ISS 6, 1980,727-32

Toftg'ard R ; Nilsen OG ; Gustafsson JA
Changes in rat liver microsomal cytochrome P-450 and enzymatic
activities after the inhalation of n-hexane, xylene, methyl ethyl
ketone and methylchloroform for four weeks.
Scand J Work Environ Health; VOL 7, ISS 1, 1981, P31-7

Geller I
INHALATION STUDIES OF VOLATILE HYDROCARBONS
Toxicology Research Projects Directory, Vol.04 iss.02 1979

MARKS TA ; FISHER PW ; STAPLES RE
INFLUENCE OF N-HEXANE ON EMBRYO AND FETAL DEVELOPMENT IN MICE
DRUG CHEM TOXICOL; 3:393-406,1980

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

Chemical Industry Institute of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**

Contract No:
and/or
Control No:

**PROJECT TITLE:**

90 day Vapor Inhalation Toxicity Study on Methyl Ethyl Ketone in Albino Rats

| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
|---|---|
| E. J. Gralla, VMD (CIIT) | Chief of Toxicology |
| Finis L. Cavender, Ph.D. (ToxiGenics) | Study Director |

**PERFORMING ORGANIZATION:**

Name and Address. Including Zip Code:
ToxiGenics, Inc.
1800 East Pershing Road
Decatur, Illinois 62526

**PERIOD FOR THIS NRP:**

Start Date: August 1980
End Date: November 1980
Annual Funding:

**PROJECT SUMMARY:**

This study was conducted to determine the subchronic toxicity of methyl ethyl ketone vapors when animals were exposed for 6 hours per day, 5 days per week for a minimum of 90 days. Three groups of animals, 15 male and 15 females each, were exposed to concentrations of 1250, 2500, or 5000 ppm methyl ethyl ketone. The control group was exposed to clean air only.

At 90 days, evaluations included daily observations, body weights, clinical chemistries, gross necropsy observations, histopathological findings, and teased nerve fiber preparations.

CAS Registry No.
Methyl ethyl ketone 78-93-3

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Altenkirch H ; Stoltenburg-Didinger G ; Wagner HM
Experimental data on the neurotoxicity of methyl ethyl ketone (MEK)
Experientia; VOL 35, ISS 4, 1979,503-4

Toftg'ard R ; Nilsen OG ; Gustafsson JA
Changes in rat liver microsomal cytochrome P-450 and enzymatic activities after the inhalation of n-hexane, xylene, methyl ethyl ketone and methylchloroform for four weeks.
Scand J Work Environ Health; VOL 7, ISS 1, 1981, P31-7

DEACON MM ; PILNY MD ; JOHN JA ; SCHWETZ BA ; MURRAY FJ ; YAKEL HO
KUNA RA
Embryotoxicity and fetotoxicity of inhaled methylethyl ketone in rats.
TOXICOL APPL PHARMACOL; 59 (3). 1981. 620-622.

ALDERSON MR ; RATTAN NS
Mortality of workers on an isopropyl alcohol plant and 2 methylethylketone dewaxing plants.
BR J IND MED; 37 (1). 1980. 85-89.

JOHN JA ; PILNY MK ; KUNA RA ; DEACON MM ; YAKEL HO
TERATOLOGIC EVALUATION OF METHYL ETHYL KETONE IN THE RAT
TERATOLOGY; 21:47A,1980

SCHMIDT R ; SCHNOY N ; WAGNER HM ; ALTENKIRCH H
ULTRASTRUCTURAL STUDIES ON TOXIC EFFECTS IN LUNG TISSUE INDUCED BY INHALATION OF SOLVENTS
2ND INTERNATIONAL CONGRESS ON TOXICOLOGY, BRUSSELS, BELGIUM, JULY 6-11, 1980. TOXICOL LETTERS (AMST); 0 (SPEC. ISSUE 1). 1980. 45.

Deacon MM ; Pilny MD ; John JA ; Schwetz BA ; Murray FJ ; Yakel HO
Kuna RA
Embryo- and fetotoxicity of inhaled methyl ethyl ketone in rats.
Toxicol Appl Pharmacol; VOL 59, ISS 3, 1981, P620-2

Cavender F ; Gralla E
INHALATION STUDY OF METHYL ETHYL KETONE VAPOR
Toxicology Research Projects Directory, Vol.06 iss.05 1981

Vongrungsemon P ; Boeniger M
Industrial Hygiene Report: In-Depth Survey, Solvent Vapor Survey of Screen Printing Operations at Garrett Studio, 142 West 24th Street, New York City, New York
Govt Reports Announcements & Index (GRA&I), Issue 26, 1981

HOLMBERG PC
CENTRAL-NERVOUS-SYSTEM DEFECTS IN CHILDREN BORN TO MOTHERS EXPOSED TO ORGANIC SOLVENTS DURING PREGNANCY
LANCET; 2:177-179,1979

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

Chemical Industry Institute of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

90 day Hydrogen Sulfide Vapor Inhalation Toxicity Study in Rats and Mice

| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
|---|---|
| James S. Bus, Ph.D. (CIIT) | Scientist |
| J. Michael Morgan, Ph.D. (ToxiGenics) | Senior Toxicologist |

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
ToxiGenics, Inc.
1800 East Pershing Road
Decatur, Illinois 62526

PERIOD FOR THIS NRP

Start Date: January 1982
End Date: April 1982
Annual Funding:

PROJECT SUMMARY:

The objective of this study is to obtain information on the subchronic toxicity of hydrogen sulfide via inhalation exposure. Three strains of animals, Fischer 344 rats, Sprague Dawley rats, and B6C3F1 mice, will be exposed to concentrations of 10, 30, or 80 ppm hydrogen sulfide for 6 hours per day, 5 days per week for a minimum of 90 days. Control animals will be exposed to clean air only. Evaluation will be made of daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Hydrogen sulfide 7783-06-4

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Tansy MF ; Kendall FM ; Fantasia J ; Landin WE ; Oberly R
Sherman W
Acute and subchronic toxicity studies of rats exposed to vapors
of methyl mercaptan and other reduced-sulfur compounds
J. Toxicol. Environ. Health; VOL 8, ISS 1-2, 1981,71-88

HIGUCHI Y
Behavioral studies on toxicity of hydrogen sulfide by means of
conditioned avoidance responses in rats.
FOLIA PHARMACOL JPN; 73 (3). 1977 307-320

BARILYAK IR ; VASIL'EVA IA ; KALINOVSKAYA LP
EFFECTS OF LOW CONCENTRATIONS OF CARBON DISULFIDE AND HYDROGEN
SULFIDE ON INTRAUTERINE DEVELOPMENT IN RATS
ARKH ANAT GISTOL EMBRIOL; 68:77-81,1975

Pavlova TE ; Sal'nikova LS ; Sheveleva GA
[Special features of the rat embryogenesis in experimental
lesions of the maternal lungs caused by hydrogen sulfide]
Akush Ginekol (Mosk), ISS 6, 1977, P69-71

BURNETT WW ; KING EG ; GRACE M ; HALL WF
Hydrogen sulfide poisoning: Review of 5 years' experience.
CAN MED ASSOC J; 117 (11). 1977 1277-1280

SAVOLAINEN H ; TENHUNEN R ; ELOVAARA E ; TOSSAVAINEN A
Cumulative biochemical effects of repeated subclinical hydrogen
sulfide intoxication in mouse brain.
INT ARCH OCCUP ENVIRON HEALTH; 46 (1). 1980. 87-92.

Belanger PL
Health hazard evaluation determination report no. HE 79-31-699,
University Corporation for Atmospheric Research, Mauna Loa
Observatory, Hilo, Hawaii 96720
Report; ISS NIOSH-HE-79-31-699; Order No. PB81-111247,, 1980,11
pp.

Reynolds FA ; Haines TA
Effects of chronic exposure to hydrogen sulfide on newly hatched
brown trout Salmo trutta L.
Environ. Pollut., Ser. A: Ecol. Biol.; VOL 22, ISS 1, 1980,11-17

SUSMAN JL ; HORNIG JF ; THOMAE SC ; SMITH RP
Pulmonary excretion of hydrogen sulfide, methanethiol, dimethyl
sulfide and dimethyl disulfide in mice.
DRUG CHFM TOXICOL; 1 (4). 1978 (RECD. 1979). 327-338.

Hervin RL
Technical assistance report TA 80-33, Omaha Waste Pretreatment
Plant, Omaha, Nebraska [USA]
Report; ISS NIOSH-HE/TA-80-33; Oorder No. PB81-111148,, 1980,11
pp.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
Chemical Industry Institute of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:

90 day Carbon Disulfide Vapor Inhalation Toxicity Study in Rats and Mice

| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
|---|---|
| James S. Bus, Ph.D. (CIIT) | Scientist |
| M. Michael Morgan, Ph.D. (ToxiGenics) | Senior Toxicologist |

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
ToxiGenics, Inc.
1800 East Pershing Road
Decatur, Illinois 62526

PERIOD FOR THIS NRP:
Start Date: February 1982
End Date: May 1982
Annual Funding:

PROJECT SUMMARY:

The objective of this study is to obtain information on the subchronic toxicity of carbon disulfide via inhalation exposure. Three strains of animals, Fischer 344 rats, Sprague Dawley rats, and B6C3F1 mice, will be exposed to concentrations of 50, 300, or 800 ppm carbon disulfide for 6 hours per day, 5 days per week for a minimum of 90 days. Control animals will be exposed to air only. Evaluation will be made of daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Carbon disulfide 75-15-0

TOX-TIPS APRIL 1982 71-39

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Issa A ; El-Hawary MF S ; El-Shobaki FA ; El-Dessouky SA
Massoud AA E
Tissue histopathological changes in carbon disulfide intoxicated rats
Egypt. J. Occup. Med.; VOL 5, ISS 1, 1977,87-96

Balabaeva L ; Tabakova S
Changes in lipid metabolism in pregnant white rats and their fetuses following inhalation exposure to carbon disulfide
Probl. Khig.; VOL 4,, 1979,92-100

Wegrowski J
Effect of carbon disulfide on the metabolism of connective tissue in the rat lung and aorta
Med. Pr.; VOL 31, ISS 1, 1980,13-19

Colombi A ; Maroni M ; Picchi O ; Rota E ; Castano P ; Foa V
Carbon disulfide neuropathy in rats. A morphological and ultrastructural study of degeneration and regeneration
Clin. Toxicol.; VOL 18, ISS 12, 1981,1463-74

Balabaeva L ; Tabakova S
Relation between the inhalation concentrations of carbon disulfide and its content in the organs and some biochemical indexes in pregnant white rats and their fetuses
Khig. Zdraveopaz.; VOL 21, ISS 6, 1978,573-9

MCKENNA MJ ; DISTEFANO V
Carbon disulfide: I. The metabolism of inhaled carbon disulfide in the rat.
J PHARMACOL EXP THER; 202 (2). 1977 245-252

TABACOVA S ; BALABAEVA L
AGGRAVATION OF CS2 TERATOGENICITY AFTER EXPOSURE OF PROGENY OF CS2 TREATED MOTHERS
ACTA MORPHOL ACAD SCI HUNG; 28:224-225,1980

Lukas E
Eight years of experience with experimental carbon disulfide polyneuropathy in rats
G. Ital. Med. Lav.; VOL 1, ISS 1, 1979,7-15

BOKINA AI ; KAN TM ; BEREZINA OV ; PINIGINA IA
STUDY OF COMPLEX BEHAVIORAL FORMS IN ANIMALS USED IN THE HYGIENIC EVALUATION OF TOXIC SUBSTANCES
GIG SANIT; 0 (7). 1979. 49-51.

Meyer CR
Semen quality in workers exposed to carbon disulfide compared to a control group from the same plant
JOM, J. Occup. Med.; VOL 23, ISS 6, 1981,435-9

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
Chemical Industry Institite of Toxicology
6 Davis Drive
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
Chronic Inhalation Toxicity Study on Chlorine in Rats and Non-Human Primates

| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
|---|---|
| Craig S. Barrow, Ph.D. (CIIT) | Inhalation Toxicologist |
| Mr. Charles Ulrich (IRDC) | Director, Inhalation Toxicology |

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
International Research and
Development Corporation
Mattawan, MI 49071

PERIOD FOR THIS NRP:
Start Date: October 1981
End Date: October 1983
Annual Funding:

PROJECT SUMMARY:

The objective of this study is to develop data in rats and monkeys on the chronic inhalation toxicity of chlorine and to assess in rats the carcinogenic potential when chlorine is administered via the inhalation route. The study design includes four groups consisting of 120 male and 120 female rats, and 4 male and 4 female monkeys each. Three groups will be exposed to chlorine concentrations of either 0.1, 0.5, or 2.5 ppm for 6 hours per day, 5 days per week for 24 months. The control group will be exposed to clean air only on the same exposure regimen.

Interim evaluations will be carried out at six, twelve, and eighteen months with the final sacrifice at 24 months. Evaluations at all time points include daily observations, body weights, clinical chemistries, gross necropsy observations, and histopathological findings.

CAS Registry No.
Chlorine 7782-50-5

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Starek A ; Moszczynski P ; Zybura M
Chemical hazards in electrochemical processing. II. Experimental studies on the toxicity of nitric oxides and chlorine. Changes in the peripheral blood of rats
Med. Pr.; VOL 32, ISS 3, 1981,207-12

KANE LE ; BARROW CS ; ALARIE Y
A short-term test to predict acceptable levels of exposure to airborne sensory irritants.
AM IND HYG ASSOC J; 40 (3). 1979. 207-229.

BARROW CS ; DODD DE
Ammonia production in inhalation chambers and its relevance to chlorine inhalation studies.
TOXICOL APPL PHARMACOL; 49 (1). 1979. 89-96.

BARROW CS ; KOCIBA RJ ; RAMPY LW ; KEYES DG ; ALBEE RR
An inhalation toxicity study of chlorine in Fischer 344 rats following 30 days of exposure.
TOXICOL APPL PHARMACOL; 49 (1). 1979. 77-88.

Raje RR ; Sciarra JJ ; Greenberg L
The acute inhalation toxicity in rats from pyrolysis products of polymeric materials
J. Combust. Toxicol.; VOL 8, ISS Feb., 1981,45-51

DODD DE ; BUS JS ; BARROW CS
Lung sulfhydryl changes in rats following chlorine inhalation.
TOXICOL APPL PHARMACOL; 52 (2). 1980. 199-208.

Drew RT ; Kutzman RS
EVALUATION OF RESPIRATORY MECHANICS AND OTHER ENDPOINTS AS INDICES OF CHLORINE TOXICITY AFTER SIXTY-TWO EXPOSURE DAYS
Toxicology Research Projects Directory, Vol.07 iss.02 1981

WALDRON HA ; HARRINGTON JM
EFFECTS OF WORK EXPOSURES ON ORGAN SYSTEMS 2. BLOOD LUNGS AND NERVOUS SYSTEM
SCHILLING, R. S. F. (ED.). OCCUPATIONAL HEALTH PRACTICE, 2ND EDITION. XVIII+630P. BUTTERWORTHS: WOBURN, MASS., USA; LONDON, ENGLAND. ILLUS. MAPS. ISBN 0-407-33701-6.; 0 (0). 1981. P115-144.

ROGAN W ; GLADEN B
ENVIRONMENTAL CONTAMINANTS IN HUMAN MILK THE BREAST MILK AND FORMULA PROJECT
ANNUAL MEETING OF THE AMERICAN PEDIATRIC SOCIETY AND THE SOCIETY FOR PEDIATRIC RESEARCH, SAN FRANCISCO, CALIF., USA, APRIL 28-MAY 1, 1981. PEDIATR RES; 15 (4 PART 2). 1981. 522.

Jones RN
LONG TERM RESPIRATORY EFFECTS OF HIGH LEVEL ACUTE CHLORINE GAS EXPOSURE (HUMAN)
Toxicology Research Projects Directory, Vol.05 iss.05 1980
Epidemiology Research Projects Directory, 1980

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service, P.O. Box 12233
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: Interagency Agreement No. 222-Y01-ES-9-0043

PROJECT TITLE:
Evaluation of Pulmonary Function, Structure, Composition, and Other Endpoints After Exposure of Fischer-344 Rats to Silica Dust

INVESTIGATOR(S):
Robert T. Drew
Ray S. Kutzman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Inhalation Toxicology

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
Medical Department
Brookhaven National Laboratory
Upton, New York 11973

PERIOD FOR THIS NRP
Start Date: February 1982
End Date: March 1983
Annual Funding:

PROJECT SUMMARY:

Fischer-344 rats will be exposed to filtered air or silica (MIN-U-SIL 5) at 2, 10, or 20 mg/m$^3$ (6 hrs/day, 5 days/wk) for 62 or 127 days. Endpoint assessment will be conducted on three subgroups of animals: (1) animals exposed for 62 days then assessed, (2) animals exposed for 127 days then assessed, and (3) animals exposed for 127 days and assessed 6 months after cessation of exposure.

The pulmonary mechanics of animals from each exposure group will be assessed at all three time points. Respiratory tissues from all animals which complete the pulmonary function tests will be examined for silica induced pathologic damage and for compositional changes. A full complement of tissues from additional animals in each chamber will be examined for histopathologic changes at all three time points.

After 127 days of exposure, cytogenetic damage will be assessed by scoring sister chromatid exchanges and chromosomal aberrations in selected cell populations. The reproductive potential of male and female rats will also be assessed after 127 days of MIN-U-SIL exposure.

CAS Registry No.
Silica 7631-86-9

TOX-TIPS APRIL 1982 71-43

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrievcd the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

PODGAIKO GA ; KATSNELSON BA ; LEMIASEV MF ; BABUSHKINA LG
SOLMINA SN ; RUSIAEVA LV ; KISLITSINA NS
Experimental silicosis in rats during chronic inhalation of a colloidal solution of silicic acid.
GIG TR PROF ZABOL; 0 (7). 1980. 24-27.

REISER KM ; HESTERBERG TW ; CROSS CE ; LAST JA
SILICOSIS AND FIBROSIS CHANGES IN RAT LUNG COLLAGEN METABOLISM AFTER INTRA TRACHEAL INSTILLATION OF QUARTZ
ANNUAL MEETING OF THE WESTERN SECTION, AMERICAN FEDERATION FOR CLINICAL RESEARCH, CARMEL, CALIF., USA, FEB. 4-6, 1981. CLIN RES; 29 (1). 1981. 70A.

WAGNER M MF ; WAGNER JC ; DAVIES R ; GRIFFITHS DM
Silica-induced malignant histiocytic lymphoma: Incidence linked with strain of rat and type of silica.
BR J CANCER; 41 (6). 1980. 908-917.

MIREJOVSKA E ; BASS A ; HURYCH J ; TEISINGER J
Enzyme changes during experimental silicotic fibrosis: 2. Intermediary metabolism enzymes of the lungs.
ENVIRON RES; 25 (2). 1981. 434-440.

Groth DH ; Moorman WJ ; Lynch DW ; Stettler LE ; Wagner WD
Hornung RW
Chronic effects of inhaled amorphous silicas in animals
ASTM Spec. Tech. Publ.; VOL 732, ISS Health Eff. Synth. Silica Part., 1981,118-43

Dauber JH ; Rossman MD ; Pietra GG ; Jimenez SA ; Daniele RP
Experimental silicosis: morphologic and biochemical abnormalities produced by intratracheal instillation of quartz into guinea pig lungs.
Am J Pathol; VOL 101, ISS 3, 1980, P595-612

Lewis T
FIBROGENIC RESPONSES AND PULMONARY CARCINOGENESIS - NCI
Toxicology Research Projects Directory, Vol.06 iss.04 1981

DAVID A ; HURYCH J ; EFFENBERGEROVA E ; HOLUSA R ; SIMECEK J
Laboratory testing of biological activity of ore mine dust: Fibrogenicity, cytotoxicity and hemolytic activity.
ENVIRON RES; 24 (1). 1981. 140-151.

Stankus RP ; Salvaggio JE
Bronchopulmonary humoral and cellular enhancement in experimental silicosis.
J Reticuloendothel Soc; VOL 29, ISS 2, 1981, P153-61

Davis GS ; Hemenway DR ; Evans JN ; Lapenas DJ ; Brody AR
Alveolar macrophage stimulation and population changes in silica-exposed rats.
Chest; VOL 80, ISS 1 Suppl, 1981, P8-10

# INDEX OF COMPOUNDS

- Carbon disulfide
  - Mouse - inhalation - 90-day...71:39
  - Rat - inhalation - 90-day...71:39
- Chlorine
  - Monkey - inhalation - carcinogenicity - 24-month...71:41
  - Rat - inhalation - carcinogenicity - 24-month...71:41
- Dimethylamine
  - Mouse - inhalation - 24-month...71:27
  - Rat - inhalation - 24-month...71:27
- n-Hexane
  - Rat - inhalation - 90-day...71:33
- Hydrogen sulfide
  - Mouse - inhalation - 90-day...71:37
  - Rat - inhalation - 90-day...71:37
- Methyl chloride
  - Rat - inhalation - long-term - Reproduction and fertility...71:31
- Methyl ethyl ketone
  - Rat - inhalation - 90-day...71:35
- Nitrobenzene
  - Mouse - inhalation - 90-day...71:29
  - Rat - inhalation - 90-day...71:29
- Silica
  - Rat - inhalation - short-term...71:43

## Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-38-7 Vinylidene fluoride...68:35
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-11-8 Chloroacetic acid...57:19
79-06-1 Acrylamide...55:21, 55:23
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21
87-62-7 2,6-Xylidine...56:29, 59:13
87-86-5 Pentachlorophenol...66:5
89-63-4 4-Chloro-2-nitroaniline...70:27
91-20-3 Naphthalene...69:7

| | |
|---|---|
| 91-64-5 | Coumarin...57:27 |
| 91-79-2 | Thenyldiamine (Pharmaceutical)...64:9 |
| 91-80-5 | Methapyrilene...64:15 |
| 91-81-6 | Tripelenamine...64:7 |
| 91-84-9 | Pyrilamine...64:11 |
| 92-48-8 | 6-Methylcoumarin...57:23 |
| 93-76-5 | 2,4,5-T...66:5 |
| 94-66-2 | Diethyl phthalate...57:31 |
| 94-75-7 | 2,4-D...66:5 |
| 95-50-1 | 1,2-Dichlorobenzene...55:31 |
| 95-86-3 | 2,4-Diaminophenol...64:25 |
| 95-95-4 | 2,4,5-Trichlorophenol...68:33 |
| 96-09-3 | Styrene oxide...65:17 |
| 98-85-1 | alpha-Methylbenzyl alcohol...61:23 |
| 98-95-3 | Nitrobenzene...71:29 |
| 100-02-7 | p-Nitrophenol...65:13 |
| 100-40-3 | 4-Vinylcyclohexene...57:9 |
| 100-41-4 | Ethylbenzene...69:21 |
| 100-42-5 | Styrene...55:27 |
| 100-44-7 | Benzyl chloride...65:5 |
| 101-90-6 | Diglycidyl resorcinol ether...63:9 |
| 101-77-9 | 4,4'-Methylenedianiline...63:13 |
| 103-90-2 | 4-Hydroxyacetanilide...57:25 |
| 104-55-2 | Cinnamaldehyde...64:27 |
| 106-46-7 | 1,4-Dichlorobenzene...55:33 |
| 106-47-8 | p-Chloroaniline...60:21 |
| 106-87-6 | 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25 |
| 107-02-8 | Acrolein...59:23 |
| 107-07-3 | Ethylene chlorohydrin...58:19 |
| 107-15-3 | Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17 |
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9 |
| 110-54-3 | Hexane...55:21, 69:23, 71:33 |
| 110-80-5 | 2-Ethoxyethanol...65:3, 66:9 |
| 111-15-9 | 2-Ethoxyethanol acetate...65:3 |
| 111-30-8 | Glutaraldehyde...57:15 |
| 111-76-2 | 2-Butoxyethanol...65:3, 66:9 |
| 111-90-0 | 2-(2-Ethoxyethoxy)ethanol...65:3 |
| 115-07-1 | Propylene...58:23 |
| 115-09-3 | Methylmercuric chloride...55:23 |
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27 |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 |
| | (petroleum)...66:13, 66:15 |
| 120-40-1 | Lauric acid dietholamine (con 1/1);<br>(Bis(2-hydroxyethyl)lauramide)...61:21 |
| 121-19-7 | Roxarsone...59:19 |

|  |  |
|---|---|
| 121-79-9 | Propyl gallate...63:17 |
| 124-40-3 | Dimethylamine...71:27 |
| 124-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23, 69:5 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 482-89-3 | C.I. Vat Blue 1...69:17 |
| 469-21-6 | Doxylamine...64:23 |
| 470-82-6 | 1,8-Cineole...64:29 |
| 509-14-8 | Tetranitromethane...55:15, 56:27 |
| 518-47-8 | C.I. Acid Yellow 73...58:11 |
| 542-56-3 | Isobutyl nitrite...64:17 |
| 542-75-6 | 1,3-Dichloropropene...63:7 |
| 542-78-9 | Malonaldehyde...58:17 |
| 555-30-6 | Methyldopa...67:29 |
| 569-61-9 | C.I. Basic Red 9, monohydrochloride...58:13 |
| 583-39-1 | 2-Mercaptobenzimidazole...69:27 |
| 584-84-9 | 2,4-Toluene diisocyanate...59:7 |
| 598-55-0 | Methyl carbonate...67:27 |
| 673-06-3 | D-phenylalanine...70:9 |
| 828-00-2 | Dimethoxane...61:11 |
| 868-85-9 | Dimethyl hydrogen phosphite...59:3 |
| 924-42-5 | N-Methylolacrylamide...57:21 |
| 989-38-8 | Rhodamine 6G...58:9 |
| 1271-19-8 | Titanocene dichloride...60:31 |
| 1306-19-0 | Cadmium oxide...68:21 |
| 1306-23-6 | Cadmium sulfide...68:23 |
| 1309-37-1 | Ferric oxide...62:5 |
| 1313-27-5 | Molybdenum trioxide...70:7 |
| 1314-13-2 | Zinc oxide...70:21 |
| 1314-62-1 | Vanadium pentoxide...70:19 |
| 1317-71-1 | Olivine...62:7 |
| 1325-37-7 | C.I. Direct Yellow 11...69:15 |
| 1330-20-7 | Xylene...62:11, 67:11 |
| 1338-23-4 | 2-Butanone, peroxide...62:15 |
| 1344-00-9 | Sodium aluminosilicate...56:15 |
| 1406-18-4 | Vitamin E...70:17 |
| 1817-73-8 | 2-Bromo-4,6-dinitroaniline...69:9 |
| 1854-26-8 | Dimethyloldihydroxyethyleneurea...60:19 |
| 1972-08-3 | -trans-delta(9)-Tetrahydrocannabinol...70:15 |
| 2058-46-0 | Oxytetracycline hydrochloride...57:13 |
| 2385-85-5 | Mirex...63:15 |
| 2425-85-6 | C.I. Pigment Red 3...61:15 |
| 2429-74-5 | C. I. Direct Blue 15...68:27 |
| 2429-74-5 | C. I. Direct Blue 15...68:25 |
| 2475-45-8 | C.I. Disperse Blue 1...65:25 |

| | |
|---|---|
| 2610-05-1 | C. I. Direct Blue 1...68:25 |
| 2624-17-1 | Sodium cyanurate...56:17 |
| 2757-90-6 | Agraitine...63:3 |
| 5634-39-9 | Iodinated glycerol...62:19 |
| 5716-15-4 | Maleic hydrazide diethanolamine salt...58:5 |
| 5989-27-5 | d-Limonene...60:27 |
| 6471-49-4 | C.I. Pigment Red 23...61:13 |
| 7166-19-0 | beta-Bromo-beta-nitrostyrene...69:11 |
| 7440-41-7 | Beryllium...66:11 |
| 7487-94-7 | Mercuric chloride...59:31 |
| 7631-86-9 | Silica...62:7, 71:43 |
| 7681-49-4 | Sodium fluoride...56:19 |
| 7782-50-5 | Chlorine...64:3, 71:41 |
| 7783-06-4 | Hydrogen sulfide...71:37 |
| 7783-81-5 | Uranium-238 hexafluoride...55:9 |
| 9002-92-0 | Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5 |
| 9003-39-8 | 1-Vinyl-2-pyrrolidinone polymers...68:29 |
| 9005-65-6 | Polysorbate 80...60:15 |
| 10028-15-6 | Ozone...59:25 |
| 10098-97-2 | Strontium-90...56:9 |
| 10325-94-7 | Cadmium nitrate...69:13 |
| 10361-37-2 | Barium chloride...70:25 |
| 12001-28-4 | Crocidolite...63:27 |
| 12001-29-5 | Chrosotile...63:25 |
| 12172-73-5 | Amosite...63:23 |
| 12266-32-9 | Plutonium-238 dioxide...61:7 |
| 12741-11-6 | Zirconium silicate...62:7 |
| 13552-44-8 | 4,4'-Methylenedianiline dihydrochloride...63:13 |
| 13961-86-9 | Oleic acid dietholamine salt...65:15 |
| 13968-56-4 | Plutonium-239 tetranitrate...61:7 |
| 14047-09-7 | 3,3',4,4'-Tetrachloroazobenzene...58:3 |
| 14807-96-6 | Talc...70:13 |
| 14808-60-7 | Quartz...62:5 |
| 14567-73-8 | Tremolite...63:19 |
| 15117-96-1 | Uranium-235...55:9 |
| 16127-62-1 | Amosite...63:23 |
| 16561-29-8 | 12-0-Tetradecanoylphorbol 13-acetate (TPA)...63:21 |
| 19086-72-7 | Olivine...62:7 |
| 21232-47-3 | 3,3',4,4'-Tetrachloroazoxybenzene...58:3 |
| 21645-51-2 | Hydrated alumina (Aluminum hydroxide)...62:5 |
| 22840-34-2 | Plutonium-239 dioxide...56:11, 61:7 |
| 26628-22-8 | Sodium azide...56:31 |
| 26677-58-7 | Plutonium-239 citrate...56:11 |
| 36355-01-8 | Hexabromobiphenyl...64:13 |
| 52551-67-4 | HC Yellow No. 4...64:5 |
| 53799-46-5 | Crocidolite...63:27 |
| 58425-86-8 | Aluminum silicate...62:7 |
| 61076-97-9 | Chrysotile...63:25 |
| 61105-31-5 | Crocidolite...63:27 |

| | |
|---|---|
| 64741-55-5 | Light catalytic cracked naphtha...67:3, 67:5 |
| 64741-56-6 | Vacuum residuum (petroleum)...67:21 |
| 64741-62-4 | Catalytic cracked clarified oil (petroleum)...67:23 |
| 64741-63-5 | Light catalytic reformed naphtha (petroleum)...66:25, 66:27 |
| 64741-87-3 | Sweetened naphtha (petroleum)...66:17, 66:19 |
| 64742-48-9 | Hydrotreated heavy naphtha (petroleum)...67:17, 67:19 |
| 64742-80-9 | Hydrodesulfurized middle distillate |
| 64742-81-0 | Hydrodesulfurized kerosene (petroleum)...66:21, 66:23 |
| 68334-30-5 | Petroleum products, diesel oil...61:9 |
| 68476-34-6 | Fuels, diesel, No. 2...61:9 |

## Supporting and Performing Organizations

American Petroleum Products
  *Coate, W....67:7
  *Furst, A....67:25
  *Hepler, D. I....67:9, 67:15
  *Jagannath,...67:13
  *Schroeder, R.E....67:11
  *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  *Weaver, N.K....55:27
  Sponsored studies...67:23
Battelle Columbus Laboratory...55:17, 56:23, 57:21,
  58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21,
  62:23, 62:25, 63:5, 69:5
Battelle Pacific Northwest Laboratory...58:23, 59:15,
  60:25, 61:11; 62:5, 64:13
Biodynamics...67:11
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory...71:43
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S.   60:5, 60:9, 60:11
  Yang, C.S....60:7
  Zelenak, J.P....60:9
  Sponsored studies...60:5
Central Institute for Nutrition & Food...68:19
Chemical Industry Institute of Technology
  *Barrow, C. S....71:27, 71:41
  *Bus, J.S....71:37, 71:39
  *Drew, R. T....71:43
  *Gralla, E....55:3, 55:5, 71:33, 71:35
  Hamm, T....71:29, 71:31
  *Kutzman, R. S....71:43
  *Stack, C.R....55:27, 55:29, 55:31, 55:33
  Sponsored studies...71:27, 71:29, 71:31
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23
  Coate, W. B....55:25
Inhalation Toxicology Research Institute
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp...57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  Ulrich, C....71:41
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13
Lovelace Biomedical and Environmental Research Institute
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9
  Snipes, M. B....56:9
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3

*Project Officer/Compound Manager

- National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19
  - *Brown, D....55:9
  - *Boeniger, M....55:11
  - *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  - *Cox, C....60:3
  - *Donaldson, H....66:3
  - *Elliott, L....56:3, 56:7
  - *Herrick, B....60:3
  - *Honchar, P....66:5
  - Lewis, T. R....62:5
  - Nelson, B.K....65:3
  - *Reeve, G....66:7
  - *Okun, A....66:11
  - *Robinson, C....55:7
  - *Rosenberg, M....66:9
  - Stern, F. B....62:3
  - *Taylor, P....55:13
  - Wagner, W. D....62:9
  - *Whalen, J....56:5
  - *Whitmire, C....55:15
  - Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
- National Institutes of Health
  - Sponsored studies...61:3
- National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  - *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
  - *Birnbaum, L....59:9
  - *Brown, S....69:7, 70:13
  - *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15
  - *Chu, K....69:9, 70:5
  - *Creasia, D....65:5, 65:17, 65:23
  - *Dean, J....60:17, 65:11
  - *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
  - *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
  - *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23
  - *Eastin, W....69:5, 69:5, 69:15
  - *Goldman, D....70:15
  - *Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29
  - *Gupta, B....59:5, 70:25
  - *Hartwell, W....58:5, 59:19, 59:21, 60:21
  - *Huff, J....63:15, 64:33
  - *Irwin, R....59:29, 64:25, 65:13, 69:19

*Project Officer/Compound Manager

National Toxicology Program (Cont.)
  *Jackson, C....64:17
  *Jameson, C. W....55:17, 60:27, 63:3
  *Kluwe, W. M....57:5, 65:9
  *Lamb, J. C....57:29, 63:13
  *Matthews, H....59:11, 59:27, 65:21
  *McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
  *McCoy, J.L....60:19, 69:25, 70:23, 70:27
  *Melnick, R....56:21, 59:17, 63:11
  *Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17
  *Moorman, W....70:21
  *Niemeier, R....70:19
  *Padarathsingh, M....62:19
  *Plotnick, H....69:21
  *Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
  *Quest, J....67:27, 69:27, 70:7
  *Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
  *Van Stee, E....60:13
  *Ward, J.M....58:17, 58:19, 58:21, 61:11
  *Weber, H....69:11
  *Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11
  Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
  Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5, 71:33, 71:35
  Morgan, J. M....71:37, 71:39
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29

*Project Officer/Compound Manager

- Union Carbide Corporation
  - Sponsored studies...60:5, 60:7, 60:9, 60:11
- United Auto Workers of America...56:5
- University of Birmingham, England
  - Stewart, A....62:13
  - Waterhouse, J....62:13
- University of Rochester
  - Merigan, W. H....55:23
- University of San Francisco...67:25
- University of Wisconsin
  - Hsia, M. I....58:3

*Project Officer/Compound Manager

# TOXICOLOGY INFORMATION RESPONSE CENTER
# (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

### Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

### Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

### Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

### Performing Organization

Enter name of organization where work is actually being done.

### Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

### Project Summary

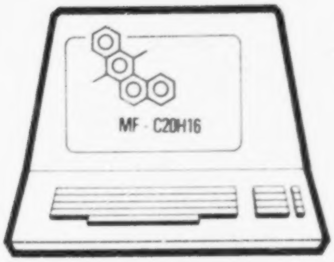
Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

### Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

☆U.S. GOVERNMENT PRINTING OFFICE: 1982 361-756/505 1-3



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# CHEMLINE
## CHEMICAL DICTIONARY ONLINE
# CONDENSED

---

Bethesda, Maryland 20209

---

**CHEMLINE DEFINED**

CHEMLINE (CHEMical Dictionary onLINE) is the National Library of Medicine's online, interactive chemical dictionary file created by the Specialized Information Services in collaboration with Chemical Abstracts Service (CAS). It provides a mechanism whereby over 500,000 chemical substances can be searched and retrieved online. This file contains CAS Registry Numbers; molecular formulas; CA chemical index nomenclature; generic and trivial names; and a locator designation which points to other files in the NLM system and the TSCA Inventory. In addition, where applicable, each CAS Registry Number record in CHEMLINE contains ring information including: number of component rings within a ring system, ring sizes, ring elemental compositions, and component line formulas.

**CHEMLINE ACCESSED**

CHEMLINE is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland. The communications linkage is provided by nation-wide networks using telephone lines and small computers with access nodes located in many cities.

**CHEMLINE SEARCHED**

The user searches CHEMLINE by entering a chemical name, generic name, trivial name, company identification name, or a molecular formula. If the exact name of a chemical substance is unknown, a search may be conducted using name fragments, formula fragments, and/or ring analysis terms. This feature also allows searching at a substructure level. Consider the molecule pyrantel tartrate:

**CHEMLINE ACCESSED**

CHEMLINE is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland. The communications linkage is provided by nation-wide networks using telephone lines and small computers with access nodes located in many cities.

**CHEMLINE COST**

The cost of access to the CHEMLINE file is $101 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $94 per hour at all other times. There is a charge of $0.45 per page for offline printouts.

**CHEMLINE USER SERVICES**

For Online Systems services including access to the CHEMLINE file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For CHEMLINE content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–1131

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

72

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

PB82-915005
NUMBER 2
MAY 1982

NEWARK PUBLIC LIBRARY

AUG 3 1 1982

U. S. GOVT. PUBS.
DEPOSITORY 376

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## TABLE OF CONTENTS

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
10 CHEMLINE CONDENSED
11 Tests for Toxicologic and Carcinogenic Effects. Status of Butyraldehyde
13 Tests for Toxicologic and Carcinogenic Effects. Status of o-Benzyl-p-Chlorophenol
15 Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Acid Red 114
17 Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Direct Blue 2
19 Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Direct Blue 218
21 Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Pigment Yellow 74
23 Tests for Toxicologic and Carcinogenic Effects. Status of Chloramine
25 Tests for Toxicologic and Carcinogenic Effects. Status of Chlorothen
27 Tests for Toxicologic and Carcinogenic Effects. Status of N,N-Dimethylformamide
29 Tests for Toxicologic and Carcinogenic Effects. Status of Manganese Sulfate
31 Tests for Toxicologic and Carcinogenic Effects. Status of Methdilazine
33 Tests for Toxicologic and Carcinogenic Effects. Status of Methylphenidate
35 INDEX OF COMPOUNDS
36 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
41 SUPPORTING AND PERFORMING ORGANIZATIONS
46 TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)
47 NOTICE OF RESEARCH PROJECT BLANK FORM
51 RTECS CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20. 3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:

| | |
|---|---|
| North American Continent addresses | $40 |
| All others | $80 |

Bulk rates available on request from NTIS

## FROM THE EDITOR

Dear Colleague:

The National Toxicology Program (NTP) Annual Plan for Fiscal Year 1982 is being distributed. If you have not received a copy, one may be requested from:

Public Information Office
National Toxicology Program
Post Office Box 12233
Research Triangle Park, NC 27709
Telephone 919-541-3991

The 249-page publication is dated March 1982, and carries document number NTP81-94.

Also released recently is the Second Annual Report on Carcinogens dated December 1981, and prepared by the NTP as document number NTP81-43. This publication is over 300 pages, including appendices, and may be obtained from the address shown above.

Carol B. Haberman
EDITOR, TOX-TIPS

# METHODS OF TESTING CHEMICALS FOF BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

---

---

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

---

---

## JOURNAL LITERATURE

Mason, M. F. Some realities and results of proficiency testing of laboratories performing toxicological analyses. *J. Anal Toxicol* 5, 201-8, 1981.

> Laboratories that work on a fee-for-service basis were evaluated for their ability to identify drugs in tissue samples and to determine values reported for the drugs

present. In spite of hints in the accompanying history, many laboratories were unable to establish the presence of the drug. Also, in a number of cases, the quantitative data did not fall within an acceptable range. The referee laboratories also reported values that ranged more widely than expected. The authors comment on possible ways of achieving more consistent results.

Tolbert, W. R., Feder, J. and Kimes, R. C. Large-scale rotating filter perfusion system for high-density growth of mammalian suspension cultures. *In Vitro 17*, 885-90, 1981.

This system has been developed for the growth and maintenance of suspension of mammalian cells in culture at high density. The ability to always provide adequate nutrients and to remove the waste products of cell metabolism makes it possible to maintain cultures of high density. Two to three times as many cells were obtained per liter of culture medium. Both the 4- and the 40-liter reactors have been successful without the use of antibiotics.

Rowan, A. N. LD50 test: critique and suggestions for alternatives. *Pharm Tech 5*, 64-66, 80, 82-86, 89-90, 92, 95, 1981.

The use of an approximate value instead of a quantitative value for the LD50 has been suggested to reduce animal suffering without sacrificing safety to human beings. The possible use of cell cultures and an emphasis on qualitative data even in active toxicity studies is discussed.

Salcman, M. Clinical hyperthermia trials: design principles and practice. *J Microwave Power 16*, 171-7, 1981.

The clinical evaluation of microwave and radiofrequency thermotherapy systems has frequently suffered from "... inadequate or inappropriate preclinical laboratory experimentation." Clinical trials should be so constructed that there is a minimum of contamination by other concurrent therapies. Human subjects must also be protected from unnecessary experimentation. "The ethical issues involved are best dealt with by good scientific design.

Ehrenberg, L. and Osterman-Golkar, S. Alkylation of macromolecules for detecting mutagenic agents. *Teratogenesis Carcinog Mutagen 1*, 105-27, 1980.

> Experimental results with laboratory organisms are limited by "...difficulties of interpretation of negative results, in quantitation, and in extrapolation from experimental effects of chemicals to specific levels of activity in man". Epidemiological studies are plagued by "...long latency times, confounding environmental factors, imprecise endpoints, and high background levels". By studying the products of toxic agents reacting as electrophilic agents with nucleophilic centers in macromolecules from cells, it may be possible to evaluate in a more quantitative fashion the exposure to specific chemicals. The effects of an agent can be compared "...quantitatively to biologically well-characterized doses of radiation."

Kirpenko, Yu A. et al. Comparative evaluation of the toxic effect of biologically active substances of blue-green algae on cellular and body levels. *Gidrobiol Zh 15*, 91-94, 1979.

> Algae of several different kinds were used to determine doses and effective concentrations for correlation between data of acute, subacute, and chronic tests on fibroblasts from rats and results obtained from cell cultures. "The cell culture technique may be used to identify toxicity of biologically active substances of general toxic character."

Speranskii, S. V. Simple method for evaluating hepatotropic and neurogenic effects in toxicological experiments. *Gig Sanit O*, 50-52, 1980.

> Experiments were worked out so that by using varying doses of hexenal, mice were induced to sleep for a relatively constant length of time. Threshold of toxic effects using single i.m. injections were determined for five standard substances. This method was effective in the

rapid evaluation of factors of chemical etiology and their ability to selectively affect the liver and nervous system.

Pomerantseva, M. D., Ramaiya, L. K., and Vilkina, G. A. Comparative efficacy of different tests for determining the mutagenicity of certain factors in mammals. 2. Frequency of abnormal sperm heads in mice exposed to various factors. *Sov Genet (Engl translation Genetika), 16, 882-885, 1980 (1981).*

Bone marrow cells were used to study the effects of various chemicals, high frequency microwaves, and cobalt-60 gamma rays. The chemicals caused mutations, and the microwaves and gamma waves caused chromosomal aberrations. Dominant lethal mutations as well as cytolytic and cytotoxic effects were present.

---

---

## GOVERNMENT REPORTS

The full ordering information for these documents can be obtained from TOXLINE.

Thomas, R. et al Evaluation of short-term bioassays to predict functional impairment. Selected short-term hepatic toxicity tests. *Govt Reports Announcements & Index (GRA&I), Issue 3, 1982.*

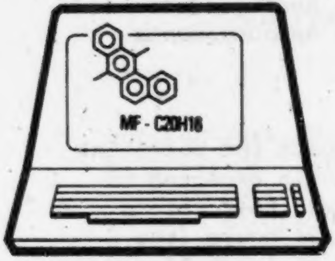
The U.S. Army Medical Bioengineering Research and Development Laboratory requested the MITRE Corporation to evaluate short-term bioassays capable of predicting and assessing damage to the hepatic system due to short-term chemical exposure. The procedures used and the criteria for assessing them are discussed. Recommendations are made for a testing system for a chemical hepatotoxic screening program. The accompanying directory lists individuals and/or laboratories currently engaged in such projects, and the procedures used such as the anesthesia and terminal nature of the test. Compounds tested are also listed.

Interagency Regulatory Liaison Group, Washington, D.C. Recommended guideline for acute dermal toxicity test. *Govt Reports Announcements & Index (GRA&I), Issue 3, 1982.*

> "A test for acute dermal toxicity should evaluate the potential for systemic and local toxic effects of chemicals expected to come in contact with the skin. The acute dermal test refers to one period of topical application of up to 24 hours (the exposure period) and an observation period of at least 14 days."

Interagency Regulatory Liaison Group, Washington, D.C. Recommended guideline for acute eye irritation testing. *Govt Reports Announcements & Index (GRA&I), Issue 3, 1982.*

> "This guideline delineates the test procedures to evaluate the toxicity of liquids, solids, aerosols, and liquids propelled under pressure to ocular tissues of laboratory animals. The test should demonstrate the potential of a substance to produce injury to the human eye. For humane reasons, substances known to be corrosive may be assumed to be eye irritants and should not be tested in the eye. Furthermore, substances shown to be severe irritants in dermal toxicity tests may be assumed to be eye irritants and need not be tested in the eye."



# CHEMLINE
## CHEMICAL DICTIONARY ONLINE
# CONDENSED

NATIONAL LIBRARY OF MEDICINE
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

Bethesda, Maryland 20209

### CHEMLINE DEFINED

CHEMLINE (CHEMical Dictionary onLINE) is the National Library of Medicine's online, interactive chemical dictionary file created by the Specialized Information Services in collaboration with Chemical Abstracts Service (CAS). It provides a mechanism whereby over 500,000 chemical substances can be searched and retrieved online. This file contains CAS Registry Numbers; molecular formulas; CA chemical index nomenclature; generic and trivial names; and a locator designation which points to other files in the NLM system and the TSCA Inventory. In addition, where applicable, each CAS Registry Number record in CHEMLINE contains ring information including: number of component rings within a ring system, ring sizes, ring elemental compositions, and component line formulas.

### CHEMLINE ACCESSED

CHEMLINE is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland. The communications linkage is provided by nation-wide networks using telephone lines and small computers with access nodes located in many cities.

### CHEMLINE COST

The cost of access to the CHEMLINE file is $101 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $94 per hour at all other times. There is a charge of $0.45 per page for offline printouts.

### CHEMLINE AVAILABILITY

CHEMLINE is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 9:00 A.M. to 5:00 P.M. (Eastern Time.)

### CHEMLINE USER SERVICES

For Online Systems services including access to the CHEMLINE file contact

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For CHEMLINE content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–1131

## NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** NCI C56291
NTP 10247-E

**PROJECT TITLE:**
Tests for Toxicologic and Carcinogenic Effects. Status of Butyraldehyde

**INVESTIGATOR(S):**
For further information contact:

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
Name and Address.
Including Zip Code.

**PERIOD FOR THIS NRP:**
Start Date:
End Date:
Annual Funding:

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by the NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The butyraldehyde study is presently in the design stage.

CAS Registry No.
Butyraldehyde 123-72-8

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Perin A ; Sessa A ; Scalabrino G ; Arnaboldi A ; Ciaranfi E
Anti-tumor activity of aliphatic aldehydes. V. Preferential inhibition of protein synthesis in normal or neoplastic tissues in relation to molecular structure
Eur. J. Cancer; VOL 8, ISS 1, 1972,111-19

BITTERSOHL G
Epidemiologic investigations on cancer incidence in workers exposed to aldol and other aliphatic aldehydes.
ARCH GESCHWULSTFORSCH; 43 (2). 1974 172-176

Prisyazhnyuk VE ; Dmitrenko GA ; Pikovskaya MA ; Slobodskoi DS
Effect of butyraldehyde on the body during its intake from the air
Gigiena Naselennykh Mest, (Kiev); ISS 18, 1979,36-40

OBE G ; BEEK B
MUTAGENIC ACTIVITY OF ALDEHYDES
DRUG ALCOHOL DEPEND; 4:91-94,1979

OPDYKE DJL
N-BUTYRALDEHYDE
FOOD COSMET TOXICOL; 17:731-734,1979

Aldehydes as neoplasm inhibitors
Jpn. Kokai Tokkyo Koho PATENT NO. 81 12312 02/06/81 (Institute of Physical and Chemical Research)

FLORIN I ; RUTBERG L ; CURVALL M ; ENZELL CR
SCREENING OF TOBACCO SMOKE CONSTITUENTS FOR MUTAGENICITY USING THE AMES' TEST
TOXICOLOGY; 15:219-232,1980

BARTHELMESS A ; ELKABARITY A
CHEMICALLY INDUCED MULTIPOLAR MITOSES. PART 3
PROTOPLASMA; 54:455-475,1962

SZYBALSKI W
SPECIAL MICROBIOLOGICAL SYSTEMS. 2.OBSERVATIONS ON CHEMICAL MUTAGENESIS IN MICROORGANISMS
ANN N Y ACAD SCI; 76:475-489,1958

EGYUED LG
STUDIES ON CELL DIVISION: THE EFFECT OF ALDEHYDES, KETONES AND ALPHA-KETO-ALDEHYDES ON THE PROLIFERATION OF ESCHERICHIA COLI
CURR MOD BIOL; 1:14-20,1967

Anon
Health Hazard Evaluation Determination Report HE 78-13-577, Equitable Baq Company, Inc., Florence, Kentucky
Govt Reports Announcements & Index (GRA&I), Issue 21, 1980

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NCI No. C61201
NTP No. 10283-V

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of o-Benzyl-p-Chlorophenol

INVESTIGATOR(S):

For further information contact:
Dr. L. Birnbaum
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code. Battelle Columbus Laboratory
Columbus, OH 43201

PERIOD FOR THIS NRP:

Start Date: July 1980
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The prechronic testing phase began January 1982. The chemical, o-benzyl-p-chlorophenol, is being administered to rats and mice by gavage.

CAS Registry No.
o-Benzyl-p-chlorophenol 120-32-1

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

WYSOWSKI DK ; FLYNT J W JR ; GOLDFIELD M ; ALTMAN R ; DAVIS AT
Epidemic neonatal hyperbilirubinemia and use of a phenolic disinfectant detergent.
PEDIATRICS; 61 (2). 1978 165-170

Martinkova H ; Knazko L ; Nemcova D ; Celechovsky J
Results of the study of relations between the biological effect of antimycotic diphenylmethane derivatives and their physicochemical properties
Rozvoj Farm. Ramci Ved.-Tech. Revoluce, Sb. Prednasek Sjezdu Cesk. Farm. Spol., 7th; 1979,135-9

Yokozeki M
On the efficacy of various disinfectants in the step-in basin
Keibyo Kenkyukai Ho; VOL 15, ISS 4, 1979,155-8

Takiguchi K
Degradation and removal of chemical compounds by microorganisms. II
PPM; VOL 10, ISS 8, 1979,47-54

La Via MF ; La Via DS
Phenol derivatives are immunodepressive in mice
Drug Chem. Toxicol.; VOL 2, ISS 1-2, 1979,167-77

Lorusso S ; Boniforti L ; Di Muccio A
The problem of the presence of impurities in commercial chemicals, in relation to the use of "coupled" analytical techniques
Riv. Merceol.; VOL 19, ISS 2, 1980,125-40

Marval E ; Rupes V ; Moravec J ; Tyburcova M ; Bezemek J
Insecticidal disinfectant and cleaning agent
Czech. PATENT NO. 182015 03/15/80

Schmahl HJ ; Hieke E
Separation and identification of some antimicrobials used also in cosmetic products by means of thin-layer chromatography
Fresenius' Z. Anal. Chem.; VOL 304, ISS 5, 1980,398-404

Renberg L
Gas chromatographic determination of phenolic compounds in wastewater as their pentafluorobenzoyl derivatives
Chemosphere; VOL 10, ISS 7, 1981,767-73

Schmahl HJ ; Matissek R
Separation and determination of phenolic antimicrobials from nonemulsion-type cosmetics containing surfactants
Fresenius' Z. Anal. Chem.; VOL 307, ISS 5, 1981,392-9

YAGI O ; SUDO R
Degradation of polychlorinated biphenyls by microorganisms.
J WATER POLLUT CONTROL FED; 52 (5). 1980. 1035-1043.

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
Contract No: and/or Control No: NCI No. C61096
NTP No. 10286-G

**PROJECT TITLE:**
Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Acid Red 114

**INVESTIGATOR(S):**
For further information contact:
Dr. J. Mennear
Chemical Manager

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
Name and Address. Including Zip Code. Hazelton Laboratories
9200 Leesburg Pike
Vienna, VA 22180

**PERIOD FOR THIS NRP:**
Start Date: September 1981
End Date:
Annual Funding:

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Prechronic testing began March 1982. The chemical, C.I. Acid Red 114, is being administered to rats via the drinking water.

CAS Registry No.
C.I. Acid Red 114 6459-94-5

TOX-TIPS MARCH 1982 72-15

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Beattie IB ; Roberts HL ; Dudley RJ
Thin-layer chromatography of dyes extracted from polyester, nylon and poly(acrylonitrile) fibers
Forensic Sci. Int.; VOL 17, ISS 1, 1981,57-69

LYNN RK ; DONIELSON DW ; ILIAS AM ; KENNISH JM ; WONG K
MATTHEWS HB
Metabolism of bisazobiphenyl dyes derived from benzidine, 3,3'-dimethylbenzidine or 3,3'-dimethoxybenzidine to carcinogenic aromatic amines in the dog and rat.
TOXICOL APPL PHARMACOL; 56 (2). 1980. 248-258.

Elliott J ; Gregory AR
Mutagenicity of a series of benzidine congener based dyes
Vet. Hum. Toxicol.; VOL 22, ISS 6, 1980,413-17

VENTURINI S ; TAMARO M
MUTAGENICITY OF ANTHRAQUINONE AND AZO DYES IN AMES' SALMONELLA TYPHIMURIUM TEST
MUTAT RES; 68:307-312,1979

Kashiwaya M
Design and operation of a waste dyeing treatment facility in Sabae City, Fukui Prefecture
U. S. Environ. Prot. Agency, Off. Res. Dev., [Rep.] EPA; ISS EPA-600/9-76-023, Proc. - U. S./Jpn. Conf. Sewage Treat. Technol., 4th,, 1976,477-88

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61110
NTP No. 10288-P

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Direct Blue 2

INVESTIGATOR(S):
For further information, contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

This study has been deleted. NIEHS is conducting C.I. Direct Blue 6 and benzidine comparisons in a subchronic study.

CAS Registry No.
C.I. Direct Blue 2 2429-73-4

TOX-TIPS MAY 1982 72-17

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

LYNN RK ; DONIELSON DW ; ILIAS AM ; KENNISH JM ; WONG K
MATTHEWS HB
Metabolism of bisazobiphenyl dyes derived from benzidine, 3,3'-dimethylbenzidine or 3,3'-dimethoxybenzidine to carcinogenic aromatic amines in the dog and rat.
TOXICOL APPL PHARMACOL; 56 (2). 1980. 248-258.

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Services
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** NCI No. C60877
NTP No. 10249-L

**PROJECT TITLE:**
Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Direct Blue 218

**INVESTIGATOR(S):**
For further information, contact:
Dr. J. Mennear
Chemical Manager

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.** International Research and
Development Corporation
Mattawan, MI 49071

**PERIOD FOR THIS NRP:**
**Start Date:** September 1981
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Testing of C.I. Direct Blue 218 is planned through the prechronic phase. The chemical is administered to rats and mice via the feed. The prechronic phase was scheduled to begin during February 1982.

CAS Registry No.
C.I. Direct Blue 218 28407-37-6

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Elliott J ; Gregory AR
Mutagenicity of a series of benzidine congener based dyes
Vet. Hum. Toxicol.; VOL 22, ISS 6, 1980,413-17

Lowry L
METABOLISM OF AZO DYES TO AROMATIC AMINES
Toxicology Research Projects Directory, Vol.06 iss.04 1981

Lewis T
CARCINOGENICITY OF AROMATIC AMINES--AZO DYES
Toxicology Research Projects Directory, Vol.06 iss.04 1981

Ericson JW
Applicability of ATP measurements for the determination of dye toxicity in short term algal assays
Bi-Annu. ATP Methodol. Symp., [Proc.], 2nd; 1977,415-39

ERICSON JW ; LITTLE LW
APPLICABILITY OF ATP MEASUREMENT FOR THE DETERMINATION OF DYE TOXICITY IN SHORT-TERM ALGAL ASSAYS
J ELISHA MITCHELL SCI SOC; 92 (2). 1976 (RECD 1977) 54

Little LW ; Lamb JC II ; Chillingworth MA ; Durkin WB
Acute toxicity of selected commercial dyes to the fathead minnow and evaluation of biological treatment for reduction of toxicity
Eng. Bull. Purdue Univ., Eng. Ext. Ser.; VOL 145, Pt. 1,,
1974,524-34

Kitko DJ
Sanitizing toilets
U.S. PATENT NO. 4248827 02/03/81 (Procter and Gamble Co.)

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NCI No. C61132
and/or
Control No: NTP No. 10226-5

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of C.I. Pigment Yellow 74

INVESTIGATOR(S):
For further information, contact:
Dr. W. Eastin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

C.I. Pigment Yellow 74 has been selected and assigned to Bioassay Program for carcinogenesis testing.

CAS Registry No.
C.I. Pigment Yellow 74 6358-31-2

TOX-TIPS MAY 1982 72-21

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

```
NIOSH/EJ3645000
BUTANAMIDE,
2-((2-METHOXY-4-NITROPHENYL)AZO)-N-(2-METHOXYPHENYL)-3-OXO-
6358-31-2
TUMORIGEN
SELECTED BY NTP FOR CARCINOGENESIS BIOASSAY AS OF SEPT 1981
REPORTED IN EPA TSCA INVENTORY, 1980
C.I. 11741 ; C.I. PIGMENT YELLOW 74 ; DALAMAR YELLOW
HANSA BRILLANT YELLOW 5GX ; LUNA YELLOW ; NCI-C61132
PERMANENT YELLOW, LEAD FREE ; PONOLITH YELLOW Y
PIGMENT YELLOW 74
C18-H18-N4-O6
386.40
8201
```

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NCI No. C56382A
NTP No. 10313-V

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Chloramine

INVESTIGATOR(S):

For further information, contact:

Dr. Carrie Whitmire
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

Tracor-Jitco Inc.
Rockville, MD 20853
and
Gulf South Research Institute
New Iberia, LA 70560

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Chloramine is being administered to rats and mice via the water. The study was scheduled to enter the chronic testing phase in March 1982. (See also TOX-TIPS October 1980, 53-21 and 53-22.)

CAS Registry No.
Chloramine 10599-90-3

TOX-TIPS MAY 1982 72-23

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

MOORE GS ; CALABRESE EJ
THE HEALTH EFFECTS OF CHLORAMINES IN POTABLE WATER SUPPLIES A LITERATURE REVIEW
J ENVIRON PATHOL TOXICOL; 4 (1). 1980. 257-264.

Moore GS ; Calabrese EJ
EFFECT OF CHLORITE AND CHLORAMINES ON KIDNEY AND NEONATE RATS AND MICE
Toxicology Research Projects Directory, Vol.06 iss.04 1981

Whitmore CE
CARCINOGENESIS BIOASSAY OF CHLORAMINE
Toxicology Research Projects Directory, Vol.06 iss.03 1981

LU SHIH K ; LEDERBERG J
EFFECTS OF CHLORAMINE ON BACILLUS SUBTILIS DEOXYRIBONUCLEIC ACID
J BACTERIOL; 125:934-945,1976

LU SHIH K ; LEDERBERG J
CHLORAMINE MUTAGENESIS IN BACILLUS SUBTILIS
SCIENCE; 192:1141-1143,1976

SKALA LZ ; ILYASHENKO BN ; LIKHACHEVA NA ; SKVORTSOVA EK
STUDY OF THE MUTAGENIC EFFECT OF HALOGEN-CONTAINING DISINFECTANTS
ZH MIKROBIOL EPIDEMIOL IMMUNOBIOL; 48(11):146,1971

BUCKLEY JA
Intoxication of trout (Salmo gairdneri) erythrocytes from hypochlorous acid and monochloramine in vitro: Evidence for different modes of action.
COMP BIOCHEM PHYSIOL C COMP PHARMACOL; 69 (1). 1981. 133-136.

MOORE GS ; CALABRESE EJ ; MCGEE M
Health effects of monochloramines in drinking water.
J ENVIRON SCI HEALTH PART A ENVIRON SCI ENG; 15 (3). 1980. 239-258.

Travis TW ; Heath AG
Some physiological responses of rainbow trout (Salmo gairdneri) to intermittent monochloramine exposure
Water Res.; VOL 15, ISS 8, 1981,977-82

Abdel-Rahman MS ; Berardi MR ; Bull RJ
Effect of Chlorine and Monochloramine in Drinking Water on the Developing Rat Fetus
Govt Reports Announcements & Index (GRA&I), Issue 04, 1982

Thomas P ; Bartos JM ; Brooks AS
Comparison of the toxicities of monochloramine and dichloramine to rainbow trout, Salmo gairdneri, under various time conditions
Water Chlorination: Environ. Impact Health Eff.; VOL 3,, 1980,581-8

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NCI No. C60559
NTP No. 10192-T

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Chlorothen

INVESTIGATOR(S):

For further information, contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

The study of chlorothen was cancelled January 1981 because of the compound's expense.

CAS Registry No.
Chlorothen 148-65-2

TOX-TIPS MAY 1982 72-25

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Krupin T ; Silverstein B ; Feitl M ; Roshe R ; Becker B
The effect of H1-blocking antihistamines on intraocular pressure in rabbits
Ophthalmology (Philadelphia); VOL 87, ISS 11, 1980,1167-72

Wheals BB
Isocratic multi-column high-performance liquid chromatography as a technique for qualitative analysis and its application to the characterization of basic drugs using an aqueous methanol solvent
J. Chromatogr.; VOL 187, ISS 1, 1980,65-85

Moffat AC
Use of SE-30 as a stationary phase for the gas-liquid chromatography of drugs
J. Chromatogr.; VOL 113, ISS 1, 1975,69-95

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NCI No. C60913
and/or
Control No: NTP No. 10256-H

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of N,N-Dimethylformamide

INVESTIGATOR(S):
For further information, contact:

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

A two-year study of n,n-dimethylformamide is planned under NIOSH management.

CAS Registry No.
N,N-Dimethylformamide 68-12-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Wagner WD ; Cameron T
CARCINOGENICITY OF DIMETHYLFORMAMIDE
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Vyadro MM ; Tikhomirova EE ; Timofeevskaya EA
Cytomorphological changes in human cancer cells under the influence of highly polar compounds
Byull. Eksp. Biol. Med.; VOL 92, ISS 11, 1981:586-8

Fishbein L
Carcinogenicity and mutagenicity of solvents. I. Glycidyl ethers, dioxane, nitroalkanes, dimethylformamide and allyl derivatives.
Sci Total Environ; VOL 17, ISS 2, 1981, P97-110 (REF: 87)

Leith JT ; Brenner HJ ; DeWyngaert JK ; Dexter DL ; Calabresi P
Glicksman AS
Selective modification of the X ray survival response of two mouse mammary adenocarcinoma sublines by N,N-dimethylformamide.
Int J Radiat Oncol Biol Phys; VOL 7, ISS 7, 1981, P943-7

Leith JT ; Gaskins LA ; Dexter DL ; Calabresi P ; Glicksman AS
Alteration of the survival response of two human colon carcinoma subpopulations to x-irradiation by N,N-dimethylformamide
Cancer Res.; VOL 42, ISS 1, 1982,30-4

Bauer NJ ; Seidler RJ ; Knittel MD
A simple, rapid bioassay for detecting effects of pollutants on bacteria
Bull. Environ. Contam. Toxicol.; VOL 27, ISS 5, 1981,577-82

Bauer D
Dimethylformamide in the air of a workplace. Monitoring problems
Swiss Chem; VOL 3, ISS 3A, 1981,109-10, 113-15

Salamone MF
Toxicity of 41 carcinogens and noncarcinogenic analogs
Prog. Mutat. Res.; VOL 1, ISS Eval. Short-Term Tests Carcinog.: Rep. Int. Collab. Program, 1981,682-5

Ba˜inova A ; Spasovski M ; Khinkova L ; Tasheva M
[Effect of the intermittent and continuous action of dimethylformamide on adaptation processes]
Probl Khig; VOL 6, 1981, P27-35

Es'kova-Soskovets LB ; Sautin AI
[Biological action of polymeric materials used in the manufacture of shoes]
Gig Sanit, ISS 9, 1981, P77-9

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61143
NTP No. 10236-5

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Manganese Sulfate

INVESTIGATOR(S):
For further information, contact:

Dr. D. Walters
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION
Name and Address Including Zip Code: Gulf South Research Institute
New Iberia, LA 70560

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Manganese sulfate is being administered to rats and mice via their feed. Prechronic testing began during March 1982.

CAS Registry No.
Manganese sulfate 7785-87-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Kushihata T ; Sakamoto M ; Kawahara K
Effect of soluble manganese compounds on the whole body. 1.
Rats given the compounds through a stomach tube
Hokuriku Koshu Eisei Gakkaishi; VOL 8, ISS 1, 1981,19-23

PRAZMO W ; BALBIN E ; BARANOWSKA H ; EJCHART A ; PUTRAMENT A
MANGANESE MUTAGENESIS IN YEAST. 2.CONDITIONS OF INDUCTION AND
CHARACTERISTICS OF MITOCHONDRIAL RESPIRATORY DEFICIENT
SACCHAROMYCES CEREVISIAE MUTANTS INDUCED WITH MANGANESE AND COBALT
GENET RES; 26:21-29,1975

PUTRAMENT A ; BARANOWSKA H ; EJCHART A ; PRAZMO W
MANGANESE MUTAGENESIS IN YEAST. A PRACTICAL APPLICATION OF
MANGANESE FOR THE INDUCTION OF MITOCHONDRIAL ANTIBIOTIC-RESISTANT
MUTATIONS
J GEN MICROBIOL; 90:265-270,1975

PUTRAMENT A ; BARANOWSKA H ; EJCHART A ; PRAZMO W
MANGANESE MUTAGENESIS IN YEAST. 4.EFFECTS OF MAGNESIUM, PROTEIN
SYNTHESIS INHIBITORS AND HYDROXYUREA ON ANTR INDUCTION IN
MITOCHONDRIAL DNA
MOL GEN GENET; 140:339-347,1975

NISHIOKA H
MUTAGENIC ACTIVITIES OF METAL COMPOUNDS IN BACTERIA
MUTAT RES; 31:185-189,1975

SACKNER MA ; FORD D
EFFECTS OF BREATHING SODIUM CHLORIDE AND SULFATE AEROSOLS IN HIGH
CONCENTRATIONS FOR 10 MINUTES ON PULMONARY FUNCTION OF NORMAL AND
ASTHMATIC ADULTS
76TH ANNUAL MEETING OF THE AMERICAN LUNG ASSOCIATION, 75TH ANNUAL
MEETING OF THE AMERICAN THORACIC SOCIETY, 68TH ANNUAL MEETING OF
THE CONGRESS OF LUNG ASSOCIATION STAFF, WASHINGTON, D.C., USA,
MAY 18-21, 1980. AM REV RESPIR DIS; 121 (4 PART 2). 1980. 255.

SACKNER MA ; MARCHETTE B ; BIRCH S ; MCDONALD R ; KIM CS
EFFECTS OF SODIUM CHLORIDE AND SULFATE AEROSOLS IN HIGH
CONCENTRATIONS ON NASAL AIR FLOW RESISTANCE AND NASAL MUCOUS
VELOCITY ON NORMAL SUBJECTS AND PATIENTS WITH ALLERGIC RHINITIS
76TH ANNUAL MEETING OF THE AMERICAN LUNG ASSOCIATION, 75TH ANNUAL
MEETING OF THE AMERICAN THORACIC SOCIETY, 68TH ANNUAL MEETING OF
THE CONGRESS OF LUNG ASSOCIATION STAFF, WASHINGTON, D.C., USA,
MAY 18-21, 1980. AM REV RESPIR DIS; 121 (4 PART 2). 1980. 254.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** NCI No. 60720B
NTP No. 10203-G

**PROJECT TITLE:**
Tests for Toxicologic and Carcinogenic Effects. Status of Methdilazine

**INVESTIGATOR(S):**
For further information, contact:

Dr. D. Goldman
Chemical Manager

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.** Litton Bionetics, Inc.
Kensington, MD 20895

**PERIOD FOR THIS NRP**
**Start Date:** September 1981
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Methdilazine is being administered to rats and mice via their feed. The chemical has been assigned to the contractor for study.

CAS Registry No.
Methdilazine 1982-37-2

TOX-TIPS MAY 1982 72-31

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

BORIS A ; TRMAL T ; NELSON E
EFFECTS OF SOME PHENOTHIAZINES ON UNILATERAL OVARIAN COMPENSATORY
HYPERTROPHY IN THE RAT
ARCH. INT. PHARMACODYN. THER.; VOL 182, ISS 1, 1969,241-50

Alexander GA
Qualitative determination of psychotropic drugs
Prakt. Panelleniou Chem. Synedriou, 4th; VOL 1,, 1972,98-102

Saferstein R ; Chao J
Identification of drugs by chemical ionization mass spectroscopy
J. Ass. Off. Anal. Chem.; VOL 56, ISS 5, 1973,1234-8

Bryant R ; Burger FJ ; Mantle DE ; Timma DL ; Trenk FB ; et a
Automated assay of single tablets of methdilazine and
methdilazine hydrochloride
J. Pharm. Sci.; VOL 62 ISS Aug 1973, P1355-1356

Whittle BJ
Nasal composition for relieving nasal distress
U.S. PATENT NO. 4269835 05/26/81

Galy AM ; Levayer C ; Galy JP ; Barbe J
Multiconformational pattern of biological actions of
phenothiazinic drugs: S.A.R. of two N-alkylpyrrolidyl
substituted derivatives as solutes
Dev. Neurosci. (Amsterdam); VOL 7, ISS Phenothiazines Struct.
Relat. Drugs: Basic Clin. Stud., 1980,21-4

Henry DR ; Block JH
Classification of drugs by discriminant analysis using fragment
molecular connectivity values
J. Med. Chem.; VOL 22, ISS 5, 1979,465-72

Missen AW
A gas-liquid chromatographic procedure for the determination of
drugs in small blood samples
Rep. - N. Z., Dep. Sci. Ind. Res., Chem. Div.; ISS C.D. 2282,,
1979,36 pp.

Wheals BB
Simple preparation of a bonded cation-exchange packing material
and its application to the separation of phenothiazines by
high-performance liquid chromatography
J. Chromatogr.; VOL 177, ISS 2, 1979,263-70

Vinh Tan Tran ; Chang RS L ; Snyder SH
Histamine H1 receptors identified in mammalian brain membranes
with [3H]-mepyramine
Proc. Natl. Acad. Sci. U. S. A.; VOL 75, ISS 12, 1978,6290-4

Ljunggren B ; Moller H
Phenothiazine phototoxicity: an experimental study on
chlorpromazine and related tricyclic drugs
Acta Derm.-Venereol.; VOL 57, ISS 4, 1977,325-9

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C56280
NTP No. 10266-R

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Methylphenidate

INVESTIGATOR(S):
For further information, contact:

Dr. W. Kouwe,
Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Information Section
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
Hazelton Raltec Inc.
P.O. Box 7545
Madison, WI 53704

PERIOD FOR THIS NRP:
Start Date: September 1981
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Methylphenidate is being administered to rats and mice via their feed. Prechronic testing is expected to begin in late summer 1982.

CAS Registry No.
Methlyphenidate 113-45-1

TOX-TIPS MAY 1982 72-33

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Dodson ME ; Fryer JM
Postoperative effects of methylphenidate.
Br J Anaesth; VOL 52, ISS 12, 1980, P1265-70

Tse DT ; Ober RR
Talc retinopathy.
Am J Ophthalmol; VOL 90, ISS 5, 1980, P624-40

Greeley GH Jr ; Kizer JS
The effects of chronic methylphenidate treatment on growth and endocrine function in the developing rat.
J Pharmacol Exp Ther; VOL 215, ISS 3, 1980, P545-51

Oill PA ; Guze LB
CHRONIC INTRAVENOUS METHYLPHENIDATE IN RABBITS
Toxicology Research Projects Directory, Vol.06 iss.08 1981

Meltzer HY ; Sturgeon RD ; Fessler R ; Simonovic M ; Gudelsky G
Fang V
PHENCYCLIDINE - A BEHAVIORAL AND NEUROCHEMICAL STUDY
Toxicology Research Projects Directory, Vol.06 iss.05 1981

Greenhill LL ; Puig-Antich J ; Halpern F ; Sachar EJ
Rubinstein B ; Chambers W ; Fiscina B ; Florea J
Growth disturbances in hyperkinetic children [letter]
Pediatrics; VOL 66, ISS 1, 1980, P152-4

Langwi´nski R ; Niedzielski J
Narcotic analgesics and stereotyped behaviour in mice.
Naunyn Schmiedebergs Arch Pharmacol; VOL 312, ISS 3, 1980, P225-7

Giner-Sorolla A ; Greenbaum J ; Last-Barney K ; Anderson LM
Budinger JM
Lack of carcinogenic effect of nitrosochlordiazepoxide and of nitrosomethylphenidate given orally to mice.
Food Cosmet Toxicol; VOL 18, ISS 1, 1980, P81-3

Yehuda S ; Ben-Uriah Y ; Carasso RL
A comparison of the hypothermic effects of methylphenidate and d-amphetamine
Int. J. Neurosci.; VOL 13, ISS 2-3, 1981,117-20

Branconnier RJ ; Cole JO
The therapeutic role of methylphenidate in senile organic brain syndrome.
Proc Annu Meet Am Psychopathol Assoc; VOL 69, 1980, P183-96

Conners CK ; Taylor E
Pemoline, methylphenidate, and placebo in children with minimal brain dysfunction.
Arch Gen Psychiatry; VOL 37, ISS 8, 1980, P922-30

# INDEX OF COMPOUNDS

- o-Benzyl-p-chlorophenol
  - Mouse - short-term - carcinogenicity...72:13
  - Rat - short-term - carcinogenicity...72:13
- Butyraldehyde
  - Carcinogenicity...72:11
- Chloramine
  - Mouse - water - long-term - carcinogenicity...72:23
  - Rat - water - long-term - carcinogenicity...72:23
- Chlorothen
  - Carcinogenicity...72:25
- C. I. Acid Red 114
  - Rat - water - short-term - carcinogenicity...72:15
- C. I. Direct Blue 2
  - Carcinogenicity...72:17
- C. I. Direct Blue 218
  - Mouse - feed - short-term - carcinogenicity...72:19
  - Rat - feed - short-term - carcinogenicity...72:19
- C. I. Pigment Yellow 74
  - Short-term - carcinogenicity...72:21
- N, N-Dimethylformamide
  - 2-year - carcinogenicity...72:27
- Manganese sulfate
  - Mouse - short-term - carcinogenicity...72:29
  - Rat - short-term - carcinogenicity...72:29
- Methdilazine
  - Mouse - feed - carcinogenicity...72:31
  - Rat - feed - carcinogenicity...72:31
- Methylphenidate
  - Mouse - feed - short-term - carcinogenicity...72:33
  - Rat - feed - short-term - carcinogenicity...72:33

## Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9, 72:27
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-38-7 Vinylidene fluoride...68:35
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-11-8 Chloroacetic acid...57:19
79-06-1 Acrylamide...55:21, 55:23
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21
87-62-7 2,6-Xylidine...56:29, 59:13
87-86-5 Pentachlorophenol...66:5
89-63-4 4-Chloro-2-nitroaniline...70:27
91-20-3 Naphthalene...69:7

91-64-5 Coumarin...57:27
91-79-2 Thenyldiamine (Pharmaceutical)...64:9
91-80-5 Methapyrilene...64:15
91-81-6 Tripelenamine...64:7
91-84-9 Pyrilamine...64:11
92-48-8 6-Methylcoumarin...57:23
93-76-5 2,4,5-T...66:5
94-66-2 Diethyl phthalate...57:31
94-75-7 2,4-D...66:5
95-50-1 1,2-Dichlorobenzene...55:31
95-86-3 2,4-Diaminophenol...64:25
95-95-4 2,4,5-Trichlorophenol...68:33
96-09-3 Styrene oxide...65:17
98-85-1 alpha-Methylbenzyl alcohol...61:23
98-95-3 Nitrobenzene...71:29
100-02-7 p-Nitrophenol...65:13
100-40-3 4-Vinylcyclohexene...57:9
100-41-4 Ethylbenzene...69:21
100-42-5 Styrene...55:27
100-44-7 Benzyl chloride...65:5
101-90-6 Diglycidyl resorcinol ether...63:9
101-77-9 4,4'-Methylenedianiline...63:13
103-90-2 4-Hydroxyacetanilide...57:25
104-55-2 Cinnamaldehyde...64:27
106-46-7 1,4-Dichlorobenzene...55:33
106-47-8 p-Chloroaniline...60:21
106-87-6 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25
107-02-8 Acrolein...59:23
107-07-3 Ethylene chlorohydrin...58:19
107-15-3 Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17
107-21-1 Ethylene glycol...64:21
108-30-5 Succinic anhydride...56:21, 59:17
108-46-3 Resorcinol...59:29
108-78-1 Melamine...63:11
108-88-3 Toluene...55:21, 57:3, 62:3, 62:11
108-90-7 Chlorobenzene...55:29
108-94-1 Cyclohexanone...65:23
109-86-4 2-Methoxyethanol...65:3, 66:9
110-54-3 Hexane...55:21, 69:23, 71:33
110-80-5 2-Ethoxyethanol...65:3, 66:9
111-15-9 2-Ethoxyethanol acetate...65:3
111-30-8 Glutaraldehyde...57:15
111-76-2 2-Butoxyethanol...65:3, 66:9
111-90-0 2-(2-Ethoxyethoxy)ethanol...65:3
113-45-1 Methylphenidate...72:33
115-07-1 Propylene...58:23
115-09-3 Methylmercuric chloride...55:23
115-96-8 Tris(2-chloroethyl) phosphate...59:27
119-90-4 3,3'-Dimethoxybenzidine...68:25
(petroleum)...66:13, 66:15
120-32-1 o-Benzyl-p-chlorophenol...72:13
120-40-1 Lauric acid dietholamine (con 1/1);
(Bis(2-hydroxyethyl)lauramide)...61:21
121-19-7 Roxarsone...59:19

| | |
|---|---|
| 121-79-9 | Propyl gallate...63:17 |
| 123-72-8 | Butyraldehyde...72:11 |
| 124-40-3 | Dimethylamine...71:27 |
| 124-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 148-65-2 | Chlorothen...72:25 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23, 69:5 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 482-89-3 | C.I. Vat Blue 1...69:17 |
| 469-21-6 | Doxylamine...64:23 |
| 470-82-6 | 1,8-Cineole...64:29 |
| 509-14-8 | Tetranitromethane...55:15, 56:27 |
| 518-47-8 | C.I. Acid Yellow 73...58:11 |
| 542-56-3 | Isobutyl nitrite...64:17 |
| 542-75-6 | 1,3-Dichloropropene...63:7 |
| 542-78-9 | Malonaldehyde...58:17 |
| 555-30-6 | Methyldopa...67:29 |
| 569-61-9 | C.I. Basic Red 9, monohydrochloride...58:13 |
| 583-39-1 | 2-Mercaptobenzimidazole...69:27 |
| 584-84-9 | 2,4-Toluene diisocyanate...59:7 |
| 598-55-0 | Methyl carbonate...67:27 |
| 673-06-3 | D-phenylalanine...70:9 |
| 828-00-2 | Dimethoxane...61:11 |
| 868-85-9 | Dimethyl hydrogen phosphite...59:3 |
| 924-42-5 | N-Methylolacrylamide...57:21 |
| 989-38-8 | Rhodamine 6G...58:9 |
| 1271-19-8 | Titanocene dichloride...60:31 |
| 1306-19-0 | Cadmium oxide...68:21 |
| 1306-23-6 | Cadmium sulfide...68:23 |
| 1309-37-1 | Ferric oxide...62:5 |
| 1313-27-5 | Molybdenum trioxide...70:7 |
| 1314-13-2 | Zinc oxide...70:21 |
| 1314-62-1 | Vanadium pentoxide...70:19 |
| 1317-71-1 | Olivine...62:7 |
| 1325-37-7 | C.I. Direct Yellow 11...69:15 |
| 1330-20-7 | Xylene...62:11, 67:11 |
| 1338-23-4 | 2-Butanone, peroxide...62:15 |
| 1344-00-9 | Sodium aluminosilicate...56:15 |
| 1406-18-4 | Vitamin E...70:17 |
| 1817-73-8 | 2-Bromo-4,6-dinitroaniline...69:9 |
| 1854-26-8 | Dimethyloldihydroxyethyleneurea...60:19 |
| 1972-08-3 | -trans-delta(9)-Tetrahydrocannabinol...70:15 |
| 1982-37-2 | Methdilazine...72:31 |
| 2058-46-0 | Oxytetracycline hydrochloride...57:13 |
| 2385-85-5 | Mirex...63:15 |
| 2425-85-6 | C.I. Pigment Red 3...61:15 |
| 2429-73-4 | C. I. Direct Blue 2...72:17 |
| 2429-74-5 | C. I. Direct Blue 15...68:27 |
| 2429-74-5 | C. I. Direct Blue 15...68:25 |
| 2475-45-8 | C. I. Disperse Blue 1...65:25 |

2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5
5989-27-5 d-Limonene...60:27
6358-31-2 C. I. Pigment Yellow 74...72:21
6459-94-5 C. I. Acid Red 114...72:15
6471-49-4 C.I. Pigment Red 23...61:13
7166-19-0 beta-Bromo-beta-nitrostyrene...69:11
7440-41-7 Beryllium...66:11
7487-94-7 Mercuric chloride...59:31
7631-86-9 Silica...62:7, 71:43
7681-49-4 Sodium fluoride...56:19
7782-50-5 Chlorine...64:3, 71:41
7783-06-4 Hydrogen sulfide...71:37
7783-81-5 Uranium-238 hexafluoride...55:9
7785-87-7 Manganese sulfate...72:29
9002-92-0 Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5
9003-39-8 1-Vinyl-2-pyrrolidinone polymers...68:29
9005-65-6 Polysorbate 80...60:15
10028-15-6 Ozone...59:25
10098-97-2 Strontium-90...56:9
10325-94-7 Cadmium nitrate...69:13
10361-37-2 Barium chloride...70:25
10599-90-3 Chloramine...72:23
12001-28-4 Crocidolite...63:27
12001-29-5 Chrosotile...63:25
12172-73-5 Amosite...63:23
12266-32-9 Plutonium-238 dioxide...61:7
12741-11-6 Zirconium silicate...62:7
13552-44-8 4,4'-Methylenedianiline dihydrochloride...63:13
13961-86-9 Oleic acid dietholamine salt...65:15
13968-56-4 Plutonium-239 tetranitrate...61:7
14047-09-7 3,3',4,4'-Tetrachloroazobenzene...58:3
14807-96-6 Talc...70:13
14808-60-7 Quartz...62:5
14567-73-8 Tremolite...63:19
15117-96-1 Uranium-235...55:9
16127-62-1 Amosite...63:23
16561-29-8 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21
19086-72-7 Olivine...62:7
21232-47-3 3,3',4,4'-Tetrachloroazoxybenzene...58:3
21645-51-2 Hydrated alumina (Aluminum hydroxide)...62:5
22840-34-2 Plutonium-239 dioxide...56:11, 61:7
28407-37-6 C. I. Direct Blue 218...72:19
26628-22-8 Sodium azide...56:31
26677-58-7 Plutonium-239 citrate...56:11
36355-01-8 Hexabromobiphenyl...64:13
52551-67-4 HC Yellow No. 4...64:5
53799-46-5 Crocidolite...63:27
58425-86-8 Aluminum silicate...62:7
61076-97-9 Chrysotile...63:25
61105-31-5 Crocidolite...63:27

64741-55-5 Light catalytic cracked naphtha...67:3, 67:5
64741-56-6 Vacuum residuum (petroleum)...67:21
64741-62-4 Catalytic cracked clarified oil (petroleum)...67:23
64741-63-5 Light catalytic reformed naphtha (petroleum)...66:25, 66:27
64741-87-3 Sweetened naphtha (petroleum)...66:17, 66:19
64742-48-9 Hydrotreated heavy naphtha (petroleum)...67:17, 67:19
64742-80-9 Hydrodesulfurized middle distillate (petroleum)...66:13, 66:15
64742-81-0 Hydrodesulfurized kerosene (petroleum)...66:21, 66:23
68334-30-5 Petroleum products, diesel oil...61:9
68476-34-6 Fuels, diesel, No. 2...61:9

## Supporting and Performing Organizations

American Petroleum Products
  *Coate, W....67:7
  *Furst, A....67:25
  *Hepler, D. I....67:9, 67:15
  *Jagannath,...67:13
  *Schroeder, R.E....67:11
  *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  *Weaver, N.K....55:27
  Sponsored studies...67:23
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5, 72:13
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13
Biodynamics...67:11
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory...71:43
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S.   60:5, 60:9, 60:11
  Yang, C.S....60:7
  Zelenak, J.P....60:9
  Sponsored studies...60:5
Central Institute for Nutrition & Food...68:19
Chemical Industry Institute of Technology
  *Barrow, C. S....71:27, 71:41
  *Bus, J.S....71:37, 71:39
  *Drew, R. T....71:43
  *Gralla, E....55:3, 55:5, 71:33, 71:35
  Hamm, T....71:29, 71:31
  *Kutzman, R. S....71:43
  *Stack, C.R....55:27, 55:29, 55:31, 55:33
  Sponsored studies...71:27, 71:29, 71:31
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15, 72:23, 72:29
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23, 72:15
  Coate, W. B....55:25
Hazelton Raltec Inc....72:33
Inhalation Toxicology Research Institute
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp...57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17, 72:19
  Ulrich, C....71:41
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13, 72:31
Lovelace Biomedical and Environmental Research Institute
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9
  Snipes, M. B....56:9
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3

*Project Officer/Compound Manager

National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19
  *Brown, D....55:9
  *Boeniger, M....55:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  *Cox, C....60:3
  *Donaldson, H....66:3
  *Elliott, L....56:3, 56:7
  *Herrick, B....60:3
  *Honchar, P....66:5
  Lewis, T. R....62:5
  Nelson, B.K....65:3
  *Reeve, G....66:7
  *Okun, A....66:11
  *Robinson, C....55:7
  *Rosenberg, M....66:9
  Stern, F. B....62:3
  *Taylor, P....55:13
  Wagner, W. D....62:9
  *Whalen, J....56:5
  *Whitmire, C....55:15
  Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
National Institutes of Health
  Sponsored studies...61:3
National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21, 72:11, 72:17, 72:25, 72:27
  *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
  *Birnbaum, L....59:9, 72:13
  *Brown, S....69:7, 70:13
  *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15
  *Chu, K....69:9, 70:5
  *Creasia, D....65:5, 65:17, 65:23
  *Dean, J....60:17, 65:11
  *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
  *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
  *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23
  *Eastin, W....69:5, 69:5, 69:15, 72:21
  *Goldman, D....70:15, 72:31
  *Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29
  *Gupta, B....59:5, 70:25
  *Hartwell, W....58:5, 59:19, 59:21, 60:21
  *Huff, J....63:15, 64:33
  *Irwin, R....59:29, 64:25, 65:13, 69:19

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

*Jackson, C....64:17
*Jameson, C. W....55:17, 60:27, 63:3
*Kluwe, W. M....57:5, 65:9, 72:33
*Lamb, J. C....57:29, 63:13
*Matthews, H....59:11, 59:27, 65:21
*McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
*McCoy, J.L....60:19, 69:25, 70:23, 70:27
*Melnick, R....56:21, 59:17, 63:11
*Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17, 72:15, 72:19
*Moorman, W....70:21
*Niemeier, R....70:19
*Padarathsingh, M....62:19
*Plotnick, H....69:21
*Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
*Quest, J....67:27, 69:27, 70:7
*Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
*Van Stee, E....60:13
*Walters, D....72:29
*Ward, J.M....58:17, 58:19, 58:21, 61:11
*Weber, H....69:11
*Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11, 72:23
Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
  Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5, 71:33, 71:35
  Morgan, J. M....71:37, 71:39
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29, 72:23

*Project Officer/Compound Manager

- Union Carbide Corporation
  - Sponsored studies...60:5, 60:7, 60:9, 60:11
- United Auto Workers of America...56:5
- University of Birmingham, England
  - Stewart, A....62:13
  - Waterhouse, J....62:13
- University of Rochester
  - Merigan, W. H....55:23
- University of San Francisco...67:25
- University of Wisconsin
  - Hsia, M. I....58:3

*Project Officer/Compound Manager

# TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer, eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

**Supporting Organization**

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

**Project Title**

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

**Investigator(s)**

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

**Performing Organization**

Enter name of organization where work is actually being done.

**Start Date, End Date and Annual Funding**

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

**Project Summary**

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

**Send All Notices of Research Projects Directly To:**

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No:**
**and/or**
**Control No:**

**PROJECT TITLE:**

**INVESTIGATOR(S):**

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

**PERFORMING ORGANIZATION:**

Name and Address.
Including Zip Code.

**PERIOD FOR THIS NRP:**

**Start Date:**

**End Date:**

**Annual Funding:**

**PROJECT SUMMARY:**

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

### Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

### Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

### Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

### Performing Organization

Enter name of organization where work is actually being done.

### Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

### Project Summary

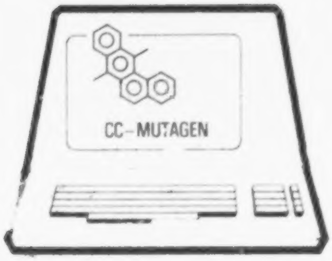
Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

### Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

*U.S. GOVERNMENT PRINTING OFFICE: 1982 361-756/506 1-3



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# RTECS

## REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES

# CONDENSED

Bethesda, Maryland 20209

**RTECS DEFINED**

RTECS (Registry of Toxic Effects of Chemical Substances) is in the National Library of Medicine's online version of the National Institute for Occupational Safety and Health's (NIOSH) annual compilation of substances with toxic action. The original collection of data that makes up RTECS was known as the Toxic Substances List, compiled in 1971 by NIOSH in response to the Occupational Safety and Health Act of 1970. The hard copy version of RTECS is updated annually with quarterly microfiche editions available. NIOSH is responsible for the file content in RTECS, and for providing quarterly updates to NLM. RTECS currently contains toxicity data for more than 50,000 substances (1/82).

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability.

**RTECS ACCESSED**

RTECS is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

**RTECS SEARCHED**

The user can search RTECS for a particular chemical record by entering the Secondary Source ID, CAS Type 1 Name, Synonyms, or CAS Registry Number. The user can also search RTECS for information on a group of compounds or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected effects reported for a given substance. Online RTECS gives the user the flexibility of interactive searching and retrieval which allows focusing on subsets of data and tailoring of prints according to user needs.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

**RTECS AVAILABILITY**

RTECS is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 5:00 P.M. (Eastern Time.)

**RTECS COST**

The cost of access to the RTECS file is $22 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $15 per hour at non prime times. There is a charge of $0.15 per page for offline printout.

**RTECS USER SERVICES**

For Online Systems services including access to the RTECS file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For RTECS content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–1131

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

73

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

NEWARK PUBLIC LIBRARY

SEP 22 1982

U. S. GOVT. PUBS.
DEPOSITORY 376

PB82-915006
NUMBER 73
JUNE 1982

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## TABLE OF CONTENTS

| Page | |
|---|---|
| 2 | ABOUT TOX-TIPS |
| 3 | FROM THE EDITOR |
| 5 | METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS |
| 12 | TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC) |
| 13 | Coal Gasification Program: Inhalation Toxicity of Airborne Effluents |
| 15 | Coal Combustion Emissions Toxicology Program |
| 17 | Diesel Technology Toxicology Program |
| 19 | Nuclear Energy Toxicology Program: Aerosol Characterization Studies |
| 21 | Nuclear Energy Toxicology Program: Dose-Response Studies |
| 23 | Tests for Toxicologic and Carcinogenic Effects. Status of p-Nitroaniline |
| 25 | Tests for Toxicologic and Carcinogenic Effects. Status of o-Nitroanisole |
| 27 | Tests for Toxicologic and Carcinogenic Effects. Status of Nitrotoluene |
| 29 | Tests for Toxicologic and Carcinogenic Effects. Status of Phosgene |
| 31 | Tests for Toxicologic and Carcinogenic Effects. Status of Promethazine |
| 33 | QUARTERLY INDEX OF COMPOUNDS |
| 37 | INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER |
| 42 | SUPPORTING AND PERFORMING ORGANIZATIONS |
| 47 | NOTICE OF RESEARCH PROJECT BLANK FORM |
| 51 | TOXLINE CONDENSED |

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20.3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:

| | |
|---|---|
| North American Continent addresses | $40 |
| All others | $80 |

Bulk rates available on request from NTIS

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

## FROM THE EDITOR

Dear Colleague:

An indexed list of laboratories that conduct tests for chemical mutagenicity has been compiled at the National Institute of Environmental Health Sciences. Released April 1982, the booklet contains names and addresses of thirty-six laboratories, organized into three sections:

Testing Laboratory Index, alphabetical by laboratory name

Geographical Index, alphabetical by state

Assay System Index, roughly phylogenetic

To obtain a free copy, address your request to:

Michael D. Shelby, Ph.D.
National Institute of Environmental
Health Sciences
Research Triangle Park, NC 27709
Telephone (919) 541-3455

Carol B. Haberman

EDITOR, TOX-TIPS

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

## JOURNAL LITERATURE

Langolf, G., Henderson, R. and Whittle, H. Sensitive tests for detection of neurotoxic effects. Meeting on chemical indices and mechanisms of organ-directed toxicity, Barcelona, Spain. March 4-7, 1981. *Gen. Pharmacol, 12, 1981.*

Bodor, N., Farag, H. H., Brewster, M. E. II. Site-specific, sustained releases of drugs to the brain. *Science. 214, 1370-2, 1981.*

The method described is a general and flexible one for site specific and/or sustained delivery of drugs to the brain. The use of a dihydropyridine carrier linked to the compound being studied makes it possible for that compound to pass the blood-brain barrier with ease. The oxidation of the carrier portion of the linked molecule accelerates its elimination from the body and prevents its loss from the brain. As the carrier portion of the molucule is cleaved from the test compound, the carrier is eliminated and the test substance delivered to the brain in a sustained fashion.

Turner, C. J. Toxin-induced inhibition of nerve terminal growth. *Neurotoxicology 2, 313-27, 1981.*

The inhibition of nerve growth by a number of toxic substances has been studied by use of an *in-vivo* model. Nerve growth at the terminal was measured and the nerve growth subsequent to nerve crush evaluated. The model can detect and quantify "...30%-100% inhibition of nerve terminal growth." The length of time required to carry out the test is its major disadvantage. The author discusses ways to measure density of the developing innervation which is the principal time consuming factor.

Herrmann, W. M. Some examples for the possibilities and limitations of pharmacoelectroencephalography as a method in clinical pharmacology. *Methods Find Exp Clin Pharmacol 3, 55S-76S, 1981.*

"Pharmacoelectroencephalography is a new methodology using clinical pharmacological research design and the methodlolgy of electroencephalography and its parametrisation by computer analysis." The development of this methodology, if it can be shown to be sensitive, offers a possible new method for research in clinical toxicology with special emphasis on neurotoxicology.

Sorsa, M. Use of prognostic mutagenicity tests in assessing the delayed toxic effects of chemical substances. *Gig Tr Prof Zabol* Jan;(1): 38-41, 1982.

Vainio, H. Reversible and irreversible effects: the basis for detecting the mechanisms of toxicity and establishing standards. *Gig Tr Prof Zabol* Jan;(1): 44-6, 1982.

An IARC appraisal of carcinogenicity testing (news) *Food Cosmet Toxicol* Dec; 19(6): 783-5, 1981.

Bishop, J. B. and Kodell, R. L. The heritable translocation assay: its relationship to assessment of genetic risk for future generations. *Teratogenesis Carcinog Mutagen 1*, 305-32, 1980.

> "The Heritable Translocation Assay (HTA) is an *in vivo* mammalian mutation test which measures specific clastogenic damage." The results of the test can be subjected to rigorous statistical analysis. At the same time this test measures damage "... that is known to contribute to the human burden of disease". The authors point out that although tests for translocation have been developed and improved over the past forty years, the HTA has certain advantages. They discuss the statistical analysis of data obtained by this test and suggest a simplified method of extrapolating the results to man. Other developmental needs of this assay and the perspectives for its application to "..regulatory assessment of environmental mutagens" are also described.

Adler, I. D. New approaches to mutagenicity studies in animals for carcinogenic and mutagenic agents. I. Modification of the heritable translocation test. *Teratogenesis Carcinog Mutagen 1*, 75-86, 1980.

The modified translocation test includes females as well as males. However, extra time and labor are necessary to determine the female translocation carriers. If only males are used, the test is not only faster but also more reliable.

Nistiar, F. and Hrusovsky, J., and Benes, J. Use of the protozoan Tetrahymena pyriformis in testing for contamination of biological materials with organophosphates and carbamates. *Vet Med (Praha) 26*, 685-700, 1981.

Media consisting of 1% protease-peptone with 0.2% yeast extract was used for slant culture of the protozoan Tetrahymena pyriformis. High cell densities were obtained under cultivation in Roux flasks. Cell numbers were obtained by direct counting in Fuchs-Rosenthal chambers.

Butcher, R. E., Wootten, V. and Vorhees, C. V. Standards in behavioral teratology testing: test variability and sensitivity. *Teratogenesis Carcinog Mutagen 1*, 48-61, 1980.

In the authors experience, the use of tests having an intermediate level of variability are most likely to reveal information about the behavioral teratogenic potential of a compound. One study with brominated vegetable oil showed that the postweaning tests had approximately twice the variability of preweaning ones. Therefore a lack of effect of the test substance on the postweaning tests could not be interpreted with any surety since these tests had a lower sensitivity. "An acceptable standard for future behavioral teratology screening requires a close examination of test variability, as it appears to be an important element in the sensitivity and, hence, the interpretation of such procedures."

Colburn, N. H., Koehler, B. A. and Nelson, K. J. A cell culture assay for tumor-promotor-dependent progression toward neoplastic phenotype: detection of tumor promotors and promotion inhibitors. *Teratogenesis Carcinog Mutagen: 1*, 87-96, 1980.

If anchorage independence is taken as an *in vitro* marker of neoplastic phenotype, then this characteristic can be used to separate the effects of tumor-promoting from non-promoting phorbol esters. The anchorage-independence test is affected by substances known to be tumor inhibiting *in vivo*. "Both retinoid inhibition and clonal heterogeneity for promotor response are being utilized to study determinants of preneoplastic progression."

Namba, M. and Kimoto, T. Culture conditions for a human lymphoma line (Raji) and their application to mutation research. *Gan:* 72, 459-63, 1981.

Under the cultural conditions described, cells could be seeded into a soft agar medium containing 6-thioguanine (6-TG) and used to detect a forward mutation without metabolic cooperation. Optimal expression time was determined using ethyl methanesulfonate. "A significant increase of mutation frequency was observed approximately 10 days after the 6-TG treatment, by which time the cells had gone through about 10 population doublings."

---

## GOVERNMENT REPORTS

Full citations and ordering numbers can be obtained from TOXLINE.

Lakings, D. B. and Gan, O. Identification or development of chemical analysis methods for plants and animal tissues. *Govt Reports Announcements & Index (GRA&I)*, Issue 6, 1981.

These methods deal with the identification and analysis of munition compounds such as trinitrotoluene in bioligical matrices.

Soliman, S. A., Curley, A. and El-Sebae. A direct method to assay neurotoxic esterase activity. *Govt Reports Announcements & Index (GRA&I)*, Issue 9, 1982.

> A photometric method for the direct assay of neurotoxic esterase in the microsomal fraction of chicken brain has been developed.

Anon. Advisory Committee on Health-Related Effects of Herbicides: Transcript of Proceedings (Fourth Meeting, April 23, 1980). *Govt Reports Announcements & Index (GRA&I)*, Issue 7, 1982.

> This meeting contains reports on the effects of Agent Orange and "...scientific experiments being conducted to determine the Agent's possible effects on Vietnam veterans".

---

## FEDERAL REGISTER

Environmental Protection Agency (EPA). Changes in test standards policy and test rules development process. *Federal Register 47*, No. 59, 13012-13014, March 28, 1982.

> This notice explains that EPA will issue "...generic test methodology guidelines rather than generic test methodology requirements. Under the new policy, draft test protocols for individual test rules will be submitted by test sponsors and the Agency will adopt final protocols after opportunity for public comment."

Environmental Protection Agency (EPA). Dichloromethane, nitrobenzene, and 1,1,1-trichloroethane changes in test rules policy. *Federal Register 47*, No. 59, 13012, March 28, 1982.

"This notice announces that EPA is implementing these changes in policy (see Federal Register of June 5, 1981, Vol. 46, 30300) and procedure for dichloromethane, nitrobenzene, and 1,1,1-trichloroethane proposed test rules."

---

## Environmental Protection Agency Publications

Falahee, K. J., Rose, C. S., Olin, S. S. and Selfried, H. E. Eye irritation testing. Assessment of methods and guidelines for testing materials for eye irritancy. Assessment Division, Office of Toxic Substances, Washington, D.C. 20460. EPA-560/11-82-0011, October 1981.

# TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:

Coal Gasification Program: Inhalation Toxicity of Airborne Effluents

INVESTIGATOR(S):

Roger O. McClellan, D.V.M., Director

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Inhalation Toxicology Research Institute
Lovelace Biomedical and Environmental Research Institute
Albuquerque, NM 87185

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
Inhalation Toxicology Research Institute
and
Morgantown Energy Technology Center
Morgantown, WV

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

The primary objective of the Coal Gasification Program is to obtain information on the possible inhalation toxicity of airborne effluents associated with coal gasification to allow a more accurate assessment of the health risk to man.

The program has benefited greatly from a cooperative effort with the Morgantown Energy Technology Center (METC), Morgantown, WV. Since June 1977, process stream material, effluent waste, and combustion products have been sampled during operation of the METC gasifier with various combinations of cleanup devices. Sampling at points along the process stream allowed evaluation of the efficiency of the control devices used and assessment of the risk associated with potential fugitive emissions. Sampling of the waste effluents provides information on the risk associated with handling of material during waste disposal, while sampling of combustion products indicates the type of materials that may be emitted to the environment and result in exposure of the general population. All samples are characterized physically and chemically and their biological activities (cytotoxicity and mutagenicity) are monitored. Chemical fractionation is used to concentrate and identify classes of compounds with the most biological activity. The sampling effort also provides bulk samples for laboratory-based inhalation toxicity studies.

A multitiered approach for toxicological evaluation of gasifier effluent is used in which samples from the METC gasifier are screened for cytotoxicity and mutagenicity in a battery of tests *in vitro* and the most biologically active samples are further characterized by more in-depth toxicological studies *in-vivo*. Bacterial and mammalian cell mutagenicity tests and alveolar macrophage cytotoxicity tests are used and additional methods for toxicological evaluation are being developed. These include isolation and culture of specific cell types or tissues from the respiratory tract for use in toxicity testing. Some compounds are tested in both *in vitro* and *in vivo* systems for a direct comparison between responses observed *in vitro* and those observed in the whole animal.

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Gajdos LV
ENVIRONMENTAL ANALYSIS OF COAL CONVERSION PROCESSES
Toxicology Research Projects Directory, Vol.07 iss.02 1981

Hinton DE
EFFECTS OF EFFLUENTS OF COAL COMBUSTION AND GASIFICATION UPON LUNG STRUCTURE AND FUNCTION
Toxicology Research Projects Directory, Vol.07 iss.02 1981

Headley L
HEALTH EFFECTS OF COAL PARTICULATES
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Hatch FT
TOXICOLOGY OF COAL GASIFICATION
Toxicology Research Projects Directory, Vol.06 iss.12 1981

Carpenter RL
LOW BTU GASIFIER BIOLOGICAL CHARACTERIZATION OF FIELD COLLECTED EFFLUENTS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Headley H
COAL GAS/COMBUSTION EFFLUENT ASSAYS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Raabe C
COAL--OIL MIXTURES TOXICOLOGY
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Headley L
TOXICOLOGICAL COAL ASSESSMENT
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Anon
Effects of Coal Combustion and Gasification Upon Lung Structure and Function. Quarterly Progress Report, March 12, 1981
Govt Reports Announcements & Index (GRA&I), Issue 25, 1981

Fry RJ ; Holland JM ; Witschi HP
ANIMAL TOXICOLOGY STUDIES OF EFFLUENTS FROM LOW-BTU GASIFIERS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Brooks AL ; Mitchell CE ; Hanson RL ; Benson JM
CYTOGENETIC STUDIES OF LUNG CELLS FOLLOWING INHALATION OF FLY ASH, CHEMICAL MUTAGENS AND EFFLUENTS FROM POWER-RELATED INDUSTRY
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Weisman S
INHALATION TOXICITY OF ORGANOMETALS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Reilly CA
TOXICOLOGY OF COAL COMBUSTION EFFLUENTS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:
Coal Combustion Emissions Toxicology Program

INVESTIGATOR(S):
Roger O. McClellan, D.V.M., Director

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Inhalation Toxicology Research Institute
Lovelace Biomedical and Environmental Research Institute
Albuquerque, NM 87185

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Inhalation Toxicology Research Institute
and
Morgantown Energy Technology Center
Morgantown, WV

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

The direct combustion of coal could increase markedly as one option for meeting our energy needs. The fluidized bed combustion (FBC) of coal is a developing technology for the direct combustion of coal as an alternative to the more conventional methods of pulverized coal combustion (PCC). Emissions of hydrocarbons and particulates for the two technologies have not been adequately compared.

Studies have been developed over the past four years to provide a basis for determining the potential health risks to man from the FBC of coal. An important aspect of the effort has been developing comparable data for PCC. A major aspect of this program has been a collaborative effort with the Morgantown Energy Technology Center (METC) at Morgantown, WV, to physically and chemically characterize potential emissions from the FBC of coal by utilizing the 18-inch experimental FBC being operated at METC.

The strategy of the program has been to obtain information on the physical and chemical characteristics of airborne material at various locations in the FBC and PCC process streams as an indicator or potential fugitive emissions to which workers may be exposed or potential environmental emissions that may result in exposure of the general population.

The major emphasis of the program is to determine the potential toxicological effects of emissions from FBC, especially as compared to PCC. A multitiered approach is being used. This consists of a series of relatively rapid *in vitro* and *in vivo* screening tests for cytotoxicity or mutagenicity. These screening tests are followed by inhalation studies to determine the retention and distribution of the inhaled materials. A limited number of materials is then selected for chronic inhalation studies which may extend for the life span of the animal to establish dose-response relationships for late-occurring diseases. With this approach, it is anticipated that the number of materials on which extensive toxicological testing is done will be reduced.

TOX-TIPS JUNE 1982 73-15

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Carpenter RL
FLUIDIZED BED COMBUSTOR (FBC) - BIOLOGICAL CHARACTERIZATION OF FIELD COLLECTED EFFLUENTS
Toxicology Research Projects Directory, Vol.07 iss.02 1981

Lee P
EFFECTS OF BY-PRODUCTS FROM COAL GASIFICATION AND FLUIDIZED BED COMBUSTION PROCESSES ON ALVEOLAR MACROPHAGES OF NEWBORN DOGS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

LANTZ RC ; HINTON DE
ALTERATION OF LUNG STRUCTURE BY PARTICULATE EFFLUENTS FROM FLUIDIZED BED COAL COMBUSTION A MORPHOMETRIC STUDY
20TH ANNUAL MEETING OF THE SOUTHERN SOCIETY OF ANATOMISTS, AUGUSTA, GA., USA, OCT. 16-18, 1980. ANAT REC; 199 (2). 1981. 298-299.

GARRETT NE ; CAMPBELL JA ; STACK HF ; WATERS MD ; LEWTAS J
The utilization of the rabbit alveolar macrophage and Chinese hamster ovary cell for evaluation of the toxicity of particulate materials: 2. Particles from coal-related processes.
ENVIRON RES; 24 (2). 1981. 366-376.

Headley L
TOXICOLOGICAL COAL ASSESSMENT
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Headley L
HEALTH EFFECTS OF COAL PARTICULATES
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Hobbs CH
FBC - CHRONIC RESPIRATORY DISEASE FROM INHALED EFFLUENTS
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Ondov JM
EMISSIONS - ADVANCED COMBUSTION
Toxicology Research Projects Directory, Vol.06 iss.11 1981

KUBITSCHEK HE ; HAUGEN DA
BIOLOGICAL ACTIVITY OF EFFLUENTS FROM FLUIDIZED BED COMBUSTION OF HIGH SULFUR COAL
ROM, W. N. AND V. E. ARCHER (ED.). HEALTH IMPLICATIONS OF NEW ENERGY TECHNOLOGIES. XXI+785P. ANN ARBOR SCIENCE PUBLISHERS, INC.: ANN ARBOR, MICH., USA. ILLUS. ISBN 0-250-40361-7.; 0 (0). 1980. P381-394.

CLARK CR ; HOBBS CH
Mutagenicity of effluents from an experimental fluidized bed coal combustor.
ENVIRON MUTAGEN; 2 (2). 1980. 101-110.

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No. and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:
Diesel Technology Toxicology Program

INVESTIGATOR(S):
Roger O. McClellan, D.V.M., Director

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Inhalation Toxicology Research Institute
Lovelace Biomedical and Environmental Research Institute
Albuquerque, NM 87185

PERFORMING ORGANIZATION:
Name and Address Including Zip Code: Inhalation Toxicology Research Institute and others

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

Diesels compared to spark-ignition engines at the present state of technology emit larger concentrations of particulate material consisting of very small chain aggregates of porous, carbonaceous particles with varying amounts of adsorbed hydrocarbons. The amount of particulates emitted and the chemical characteristics of the hydrocarbons differ with the engine and fuel types and operating conditions. The particle size is readily inhaled and deposited within the lung. The associated hydrocarbons have been shown to contain chemical species acting as potent mutagens in bacterial screening assays and carcinogens when painted on the skin of mice. In addition to particles, diesel exhaust also contains irritants, oxidants, and hydrocarbons in the vapor phase. These materials have been shown to contribute to the development of chronic lung diseases when inhaled.

The multifaceted program, for which ITRI is the lead laboratory, is directed toward developing information on diesel exhaust characteristics, the nature of atmosphere containing exhaust to which various populations might be exposed, the deposition and fate of inhaled particulates, the effective doses of toxic materials reaching sensitive tissues, and the integrated adverse health effects from long-term inhalation of diluted exhaust. Various domestic and foreign laboratories and other organizations are involved in the projects.

A large number of particulate samples collected both at ITRI and the various other laboratories are being characterized physically and chemically, and these characteristics are related back to engine types and operating conditions. A long-term study of animals exposed to diesel exhaust is being carried out. Finally, information resulting from these related projects is combined as input into models for predicting health risks among human populations.

CAS Registry No.

| | |
|---|---|
| Diesel test fuel | 68512-90-3 |
| No. 2 Diesel fuel | 68476-34-6 |
| Diesel oil (petroleum) | 68334-30-5 |

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Misiorowski RL ; Strom KA ; Vostal JJ ; Chvapil M
Lung biochemistry of rats chronically exposed to diesel particulates
U. S. Environ. Prot. Agency, Off. Res. Dev., [Rep.] EPA; ISS EPA-600/9-80-057a, Health Eff. Diesel Engine Emiss.: Proc. Int. Symp., PB81 - 173809,, 1980,465-80

Siak JS ; Chan TL ; Lee PS
Diesel particulate extracts in bacterial test systems
U. S. Environ. Prot. Agency, Off. Res. Dev., [Rep.] EPA; ISS EPA-600/9-80-057a, Health Eff. Diesel Engine Emiss.: Proc. Int. Symp., PB81 - 173809,, 1980,245-62

KING LC ; KOHAN MJ ; AUSTIN AC ; CLAXTON LD ; HUISINGH J
EVALUATION OF THE RELEASE OF MUTAGENS FROM DIESEL PARTICLES IN THE PRESENCE OF PHYSIOLOGICAL FLUIDS
ENVIRON MUTAGENESIS; 3:109-121,1981

VINEGAR A ; CARSON A ; PEPELKO WE ; ORTHOEFER JO
EFFECT OF 6 MONTHS OF EXPOSURE TO 2 LEVELS OF DIESEL EXHAUST ON PULMONARY FUNCTION OF CHINESE HAMSTERS
65TH ANNUAL MEETING OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, ATLANTA, GA., USA, APRIL 12-17, 1981. FED PROC; 40 (3 PART 1). 1981. 593.

KARAGIANES MT ; PALMER RF ; BUSCH RH
Effects of inhaled diesel emissions and coal dust in rats.
AM IND HYG ASSOC J; 42 (5). 1981. 382-391.

LI AP
Antagonistic effects of animal sera, lung and liver cytosols and sulfhydryl compounds on the cytotoxicity of diesel exhaust particle extracts.
TOXICOL APPL PHARMACOL; 57 (1). 1981. 55-62.

Meiss R ; Robenek H ; Schubert M ; Themann H ; Heinrich U
Ultrastructural alterations in the livers of golden hamsters following experimental chronic inhalation of diluted diesel exhaust emission.
Int Arch Occup Environ Health; VOL 48, ISS 2, 1981, P147-57

Chen KC ; Vostal JJ
Aryl hydrocarbon hydroxylase activity induced by injected diesel particulate extract vs. inhalation of diluted diesel exhaust
JAT, J. Appl. Toxicol.; VOL 1, ISS 2, 1981,127-31

Gross KB
Pulmonary function testing of animals chronically exposed to diluted diesel exhaust
JAT, J. Appl. Toxicol.; VOL 1, ISS 2, 1981,116-23

Dziedzic D
Differential counts of B and T lymphocytes in the lymph nodes, circulating blood and spleen after inhalation of high concentrations of diesel exhaust
JAT, J. Appl. Toxicol.; VOL 1, ISS 2, 1981,111-15

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: DE-AC04-76EV01013

PROJECT TITLE:
Nuclear Energy Toxicology Program: Aerosol Characterization Studies

INVESTIGATOR(S):
Roger O. McClellan, D.V.M.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Inhalation Toxicology Research Institute
Lovelace Biomedical and Environmental Research Institute

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Inhalation Toxicology Research Institute
Albuquerque, NM 87185

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

This program addresses broadly the inhalation toxicology of radionuclides associated with current and developing nuclear fuel cycles. Prime emphasis is being placed on the elucidation of relationships between the dose to and within critical organs and the development of long-term biological effects since both dose and effects are critical elements in risk assessments for different nuclear operations.

Aerosol characterization studies are conducted by sampling at different nuclear industrial plants and by more extensive laboratory studies. Animal studies are designed and conducted to use these laboratory-produced aerosols to determine the effects of specific physical, chemical, and biological factors on the deposition and retention of inhaled radionuclides and the resulting doses to different organs. In studies of this type, the animals are serially sacrificed at different intervals after the inhalation exposure. Samples taken at necropsy are used to estimate the absorbed dose to local areas within organs as well as at the whole organ level.

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Snipes MB ; Hahn FF ; Muggenburg BA
TOXICITY OF STRONTIUM-90 INHALED IN A RELATIIVELY INSOLUBLE FORM
BY BEAGLE DOGS
Toxicology Research Projects Directory, Vol.06 iss.09 1981

Merickel BS ; Hobbs CH ; Hahn FF
TOXICITY OF YTTRIUM-90 IN A RELATIVELY INSOLUBLE FORM BY DOGS
Toxicology Research Projects Directory, Vol.06 iss.01 1981

Boecker BB ; Hahn FF ; Merickel BS
TOXICITY OF CERIUM-144 INHALED IN A RELATIVELY INSOLUBLE FORM BY
IMMATURE DOGS
Toxicology Research Projects Directory, Vol.06 iss.04 1981

Muggenburg BA ; Mewhinney JA ; Hahn FF
TOXICITY OF INHALED ALPHA-EMITTING RADIONUCLIDES
Toxicology Research Projects Directory, Vol.06 iss.04 1981

Johnson CJ ; Stewart A ; Kneale GW ; Chinn S
LEUKEMIA AND NEOPLASMS OF LUNG AND OTHER ORGANS IN A GENERAL
POPULATION LIVING IN AN AREA CONTAMINATED WITH LOW LEVELS OF
PLUTONIUM
Toxicology Research Projects Directory, Vol.06 iss.12 1981
Epidemiology Research Projects Directory, 1981

McClellan RO
NUCLEAR ENERGY TOXICOLOGY PROGRAM
Toxicology Research Projects Directory, Vol.06 iss.12 1981

Bradley EW ; Alderson PO ; McWhorter RE ; Vieras F ; Olmsted WW
Fisher MP ; Rogers CC
A comparison of neutron RBE values for normal canine lung by
densitometry, pulmonary function and radionuclide studies
Int. J. Radiat. Oncol., Biol. Phys.; VOL 7, ISS 8, 1981,1055-64

Dunning DE Jr ; Killough GG ; Bernard SR ; Pleasant JC ; Walsh PJ
Estimates of internal dose equivalent to 22 target organs for
radionuclides occurring in routine releases from nuclear
fuel-cycle facilities, volume III
Report; ISS ORNL/NUREG/TM-190/V3; Order No. NUREG/CR-0150-V3,,
1981,90 pp.

Bice DE
IMMUNE IMPAIRMENT FOR INHALED RADIONUCLIDES
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Kanapilly GM
MIXED ACTINIDE OXIDE AEROSOLS - METABOLISM AND DOSIMETRY
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Diel JH
INHALED PU METABOLISM AND LOCAL PULMONARY DOSE
Toxicology Research Projects Directory, Vol.07 iss.01 1981

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
U.S. Department of Energy
Office of the Assistant Secretary
for the Environment
Washington, DC 20585

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: DE-AC04-76EV01013
and/or
Control No:

PROJECT TITLE:
Nuclear Energy Toxicology Program: Dose-Response Studies

INVESTIGATOR(S):
Roger O. McClellan, D.V.M.

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Inhalation Toxicology Research Institute
Lovelace Biomedical and Environmental Research Institute

PERFORMING ORGANIZATION
Name and Address Including Zip Code: Inhalation Toxicology Research Institute
Albuquerque, NM 87185

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

Dose response studies form the core of the nuclear program and involve two main groups of studies dealing with beta-gamma- or alpha-emitting radionuclides. Studies with dogs exposed to beta-gamma-emitting radionuclides have been in progress for up to 16 years. The most prevalent effect has been cancer in the organs most heavily irradiated. In the corresponding dose-response studies with animals exposed to alpha-emitting radionuclides, emphasis is being placed on the effects of particle size, number, and activity on the resulting biological effects. The occurrence of acute effects (radiation pneumonitis and pulmonary fibrosis) seen to date in the dogs exposed to monodisperse aerosols of $^{238}PuO_2$ appears to be lower than predicted from existing data from dogs exposed to monodisperse or polydisperse aerosols of $^{239}PuO_2$.

In addition to the use of rodents and dogs, a limited number of monkeys have been exposed to aerosols of $^{239}PuO_2$ or $^{239}Pu(NO_3)_4$ to study the metabolism and dosimetry of inhaled $^{239}Pu$ in a nonhuman primate. Results of these studies are providing a strong link between our studies in other species of laboratory animals and the expected results in exposed people.

Heavy emphasis has been placed within this program on the behavior and biological effects of radionuclides in a single, brief exposure such as might occur from an accidental, onetime release. Another group of studies is being conducted in rodents and dogs to address the possible influence of repeated inhalation exposures to beta-gamma- or alpha-emitting radionuclides on the resulting patterns of dose and biological effects.

CAS Registry No.

| | |
|---|---|
| Plutonium-238 dioxide | 12266-32-9 |
| Plutonium-239 dioxide | 22840-34-2 |
| Plutonium-239 tetranitrate | 13968-56-4 |

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Sanders CL ; Mahaffey JA
Inhalation carcinogenesis of repeated exposures to high-fired plutonium-239 dioxide in rats
Health Phys.; VOL 41, ISS 4, 1981,629-44

Diel JH ; Mewhinney JA ; Snipes MB
Distribution of inhaled plutonium-238 dioxide particles in Syrian hamster lungs
Radiat. Res.; VOL 88, ISS 2, 1981,299-312

Moores SR ; Black A ; Lambert BE ; Lindop PJ ; Morgan A
Pritchard J ; Walsh M
Deposition of thorium and plutonium oxides in the respiratory tract of the mouse
DOE Symp. Ser.; VOL 53, ISS Pulm. Toxicol. Respirable Part., 1980,103-18

Smith DM ; Thomas RG ; Anderson EC
Respiratory-tract carcinogenesis induced by radionuclides in the Syrian hamster
DOE Symp. Ser.; VOL 53, ISS Pulm. Toxicol. Respirable Part., 1980,575-90

Mewhinney JA
Radiation Dose Estimates and Hazard Evaluations for Inhaled Airborne Radionuclides
Govt Reports Announcements & Index (GRA&I), Issue 02, 1982

Levdik TI ; Mikhailina TN ; Buldakov LA
[Microdistribution of 239Pu in the eye tissues of dogs after its inhalation as the dioxide]
Radiobiologiia; VOL 21, ISS 4, 1981, P620-2

Mahaffey JA ; Sanders CL ; Dagle GE ; Park JF
A comparison of plutonium metabolism and pulmonary tumors in dogs and rats exposed to plutomium-239 dioxide
Actinides Man Anim., Proc. Snowbird Actinide Workshop; 1981,541-55, 557

Sanders CL ; Mahaffey JA
Inhalation carcinogenesis of repeated exposures to high-fired 239PuO2 in rats.
Health Phys; VOL 41, ISS 4, 1981, P629-44

McClellan RO
NUCLEAR ENERGY TOXICOLOGY PROGRAM
Toxicology Research Projects Directory, Vol.06 iss.12 1981

Muggenburg BA ; Mewhinney JA ; Hahn FF
TOXICITY OF INHALED ALPHA-EMITTING RADIONUCLIDES
Toxicology Research Projects Directory, Vol.06 iss.04 1981

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C60786
NTP No. 10217-F

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of p-Nitroaniline

INVESTIGATOR(S):
For further information, contact:
Technical Information Section

Dr. R. Chhabra

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION
Name and Address Including Zip Code:
Hazelton Raltec Inc.
P.O. Box 7545
Madison, WI 53704

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

P-nitroaniline has been committed to testing through the prechronic phase. Prechronic testing is scheduled to begin during April 1982. The compound will be administered to mice by gavage.

CAS Registry No.
p-Nitroaniline 100-01-6

TOX-TIPS JUNE 1982 73-23

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

SHAH MJ ; ANDREWS AW
MUTAGENIC EVALUATION OF OXIDATION PRODUCTS OF
P-PHENYLENE-DIAMINE, A HAIR DYE COMPONENT
TOXICOL APPL PHARMACOL; 48:A49,1979

TOPHAM JC
THE DETECTION OF CARCINOGEN-INDUCED SPERM HEAD ABNORMALITIES IN
MICE
MUTAT RES; 69:149-155,1979

Galkiewicz E ; Pyziak M ; Chomiczewski J ; Gorski T
Evaluation of the mutagenic properties of some chemical compounds
based on the induction of Escherichia coli K12 prophage lambda
Med. Dosw. Mikrobiol.; VOL 31, ISS 1, 1979,11-16

Harris LR ; Gideon JA ; Berardinelli S ; Reed LD ; Dobbin RD
Evans JM ; Telesca DR ; Tanita RK
Coal liquefaction: recent findings in occupational safety and
health
Am. Ind. Hyg. Assoc. J.; VOL 41, ISS 8, 1980,A50, A54, A56, A58,
A60, A62

Harris LR ; Gideon JA ; Berardinelli S ; Reed LD ; Dobbin RD
Coal liquefaction: recent findings in occupational safety and
health
Report; ISS NIOSH-80-122; Order No. PB81-223422,, 1980,21 pp.

Kalopissis G ; Bugaut A
2- And 5-aminoalkylamino anthraquinone dyes useful as basic dyes
in coloring hair
U.S. PATENT NO. 4226784 10/07/80 (Oreal S. A.)

Curtis MW ; Curran CM ; Ward CH
Aquatic toxicity testing as fundament for a spill prevention
program
Control Hazard. Mater. Spills, Proc. Natl. Conf.; 1980,284-8

Scholl EW ; Reeh D ; Wiemann W ; Faber M ; Kuehnen G ; Beck H
Glienke N
Combustion and explosion parameters of dusts
STF-Rep.; ISS 2, 1979,99 pp.

Bringmann G ; Kuehn R
Comparison of the toxicity thresholds of water pollutants to
bacteria, algae, and protozoa in the cell multiplication
inhibition test
Water Res.; VOL 14, ISS 3, 1980,231-41

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No and/or Control No: NCI No. C60786
NTP No. 10211-G

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of o-Nitroanisole

INVESTIGATOR(S):
For further information, contact:
Technical Information Section
Dr. R. Chhabra

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
Hazelton Raltec Inc.
P.O. Box 7545
Madison, WI 53704

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

O-nitroanisole will be tested through the prechronic phase. Prechronic studies began in December 1981. The compound is administered to rats and mice in the feed.

CAS Registry No.
o-Nitroanisole 91-23-6

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Helmes CT ; Fung VA ; Lewin B ; McCaleb KE ; Malko S
Pawlovich AM
A study of aromatic nitro compounds for the selection of candidates for carcinogen bioassay
J. Environ. Sci. Health, Part A; VOL A17, ISS 1, 1982,75-128

CHIU CW ; LEE LH ; WANG CY ; BRYAN GT
MUTAGENICITY OF SOME COMMERCIALLY AVAILABLE NITRO COMPOUNDS FOR SALMONELLA TYPHIMURIUM
MUTAT RES; 58:11-22,1978

Curtis MW ; Curran CM ; Ward CH
Aquatic toxicity testing as fundament for a spill prevention program
Control Hazard. Mater. Spills, Proc. Natl. Conf.; 1980,284-8

TOKIWA H ; NAKAGAWA R ; OHNISHI Y
MUTAGENIC ASSAY OF AROMATIC NITRO COMPOUNDS WITH SALMONELLA-TYPHIMURIUM
MUTAT RES; 91 (4-5). 1981. 321-326.

Curtis MW ; Ward CH
Aquatic toxicity of forty industrial chemicals: testing in support of hazardous substance spill prevention regulation
J. Hydrol. (Amsterdam); VOL 51, ISS 1-4, 1981,359-67

Bykova SP ; Livke VA ; Reznichenko VV ; Rotmistrov MN ; Udov VM
Bacterial decomposition of the main components of undiluted wastewater from the manufacture of aniline dyes
Khim. Tekhnol. Vody; VOL 1, ISS 2, 1979,70-3

Bretherick L
Nitroaromatic-alkali hazards: a common cause?
Ber. Int. Kolloq. Verhuetung Arbeitsunfaellen Berufskr. Chem. Ind.; VOL 6th,, 1979,539-50

Bykova SP ; Rotmistrov MN ; Livke VA ; Udod VM ; Gobova GP
Microflora of activated sludge in the step-by-step biological treatment of industrial effluents from the aniline-dye industry
Khim. Tekhnol. Vody; VOL 2, ISS 4, 1980,369-71

Galushko VV
Estimate of the allergenic activity of o-nitroanisole and p-nitroanisole in connection with the health status of reservoirs
Tr. Leningr. San.-gigien. Med. In-ta; ISS 130, 1980,27-9

MITOMA C ; NEUBAUER SE ; BADGER NL ; SORICH TJ II
HEPATIC MICROSOMAL ACTIVITIES IN RATS WITH LONG AND SHORT SLEEPING TIMES AFTER HEXOBARBITAL A COMPARISON
PROC. SOC. EXP. BIOL. MED.; VOL 125, ISS 1, 1967,284-8

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NCI No. C61212
and/or Control No: NTP No. 10144-L

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Nitrotoluene

INVESTIGATOR(S):
For further information, contact:
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Nitrotoluene was not selected for testing by NTP.

CAS Registry No.
Nitrotoluene (undefined mixture) 1321-12-6

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X, Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Kolievskaya YA ; Ivanyuk EG
Hygienic research data forming the basis for the sanitary-chemical monitoring and improvement of working conditions in the nitrotoluene, toluidine, and chloronitrobenzene industries
Gig. Tr. Prof. Zabol.; ISS 9, 1980,63-4

Kinkead ER ; MacEwen JD ; Haun CC ; Vernot EH ; Dacre JC
Toxic hazards evaluation of five atmospheric pollutants from army ammunition plants
U. S. NTIS, AD Rep.; ISS AD-A043957,, 1977,39 pp.

Small MJ
The hazard ranking and allocation methodology: evaluation of TNT wastewaters for continuing research efforts
Report; ISS USAMBRDL-TR-7808; Order No. AD-A061770,, 1978,75 pp.

TOKIWA H ; NAKAGAWA R ; OHNISHI Y
MUTAGENIC ASSAY OF AROMATIC NITRO COMPOUNDS WITH SALMONELLA TYPHIMURIUM
MUTAT RES; 91:321-325,1981

Kovalenko II
Hemotoxicity of nitrotoluenes in relation to number and positioning nitro groups
Farmakol. Toksikol. (Kiev); VOL No. 8,, 1973,137-40

Vasilenko NM ; Kovalenko II
Effect of isomerism and quantity of nitro groups on toxic properties of nitrotoluenes
Tr. Khar'k. Med. Inst.; VOL 124,, 1976,32-4

Namtseev GI ; Smolyaninova NS
Oxygen therapy of toxic neuropathies of the neurooptic pathway in people working in contact with nitro derivatives of toluene
Oftal'mol. Zh.; VOL 31, ISS 5, 1976,352-5

Pepori D ; Leto G
Treatment of water containing substances resulting from the nitration of aromatic compounds
Ital. PATENT NO. 912500 03/15/72 (A.C.N.A.-Aziende Colori Nazionali Affini, S.p.A.)

Lane DA ; Reid NM ; French JB ; Buckley JA ; Lovett AM
Rosenblatt G
Real-time analysis of trace toxic contaminants in the environment at the sub PPB level
Toxic Air Contam.: Their Meas., Eval. Control, Proc., Mid-Atl. States Sect. Semi-Annu. Tech. Conf.; 1977,185-213

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NCI No. C60219
NTP No. 10191-P

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Phosgene

INVESTIGATOR(S):

For further information, contact:
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code:

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Plans for testing of phosgene were withdrawn in June 1981 because of safety concerns.

CAS Registry No.
Phosgene 75-44-5

TOX-TIPS JUNE 1982 73-29

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

REICHERT D ; SPENGLER U ; ROMEN W ; HENSCHLER D
NEPHROTOXIC, MUTAGENIC AND CARCINOGENIC POTENTIALS OF DICHLOROACETYLENE AND ITS DECOMPOSITION PRODUCTS
NAUNYN-SCHMIEDEBERG'S ARCH PHARMACOL; 311(SUPPL):R25,1980

Diller WF
The methenamine misunderstanding in the therapy of phosgene poisoning.
Arch Toxicol; VOL 46, ISS 3-4, 1980, P199-206 (REF: 39)

Dalderup LM
TLV of carbonylfluoride [letter]
J Soc Occup Med; VOL 30, ISS 2, 1980, P87

Polednak AP
Mortality among men occupationally exposed to phosgene in 1943--1945.
Environ Res; VOL 22, ISS 2, 1980, P357-67

de Rooij CG ; van Eick AJ ; van de Meent D
Glucocorticosteroids in the Therapy of Acute Phosgene Poisoning in Rats and Mice (A76/K/094)
Govt Reports Announcements & Index (GRA&I), Issue 05, 1982

Summer W ; Haponik E
Inhalation of irritant gases.
Clin Chest Med; VOL 2, ISS 2, 1981, P273-87 (REF: 74)

Harris RN ; Anders MW
2-Propanol treatment induces selectively the metabolism of carbon tetrachloride to phosgene. Implications for carbon tetrachloride hepatotoxicity
Drug Metab. Dispos.; VOL 9, ISS 6, 1981,551-6

SHIGNEOBU T
Occupational cancer of the lungs: Cancer of the respiratory tract among workers manufacturing poisonous gases.
JPN J THORAC DIS; 18 (12). 1980 (RECD. 1981). 880-885.

ANDERSON HA
DISEASES ASSOCIATED WITH EXPOSURE TO CHEMICAL SUBSTANCES IRRITANT GASES AND FUMES
LAST, J. M. MAXCY-ROSENAU PUBLIC HEALTH AND PREVENTIVE MEDICINE, 11TH EDITION. XXV+1926P. APPLETON-CENTURY-CROFTS: NEW YORK, N.Y., USA. ILLUS. MAPS. ISBN 0-8385-6186-1.; 0 (0). 1980. P760-764.

WALDRON HA ; HARRINGTON JM
EFFECTS OF WORK EXPOSURES ON ORGAN SYSTEMS 2. BLOOD LUNGS AND NERVOUS SYSTEM
SCHILLING, R. S. F. (ED.). OCCUPATIONAL HEALTH PRACTICE, 2ND EDITION. XVIII+630P. BUTTERWORTHS: WOBURN, MASS., USA; LONDON, ENGLAND. ILLUS. MAPS. ISBN 0-407-33701-6.; 0 (0). 1981. P115-144.

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NCI No. C60673
and/or
Control No: NTP No. 10202-D

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Promethazine

INVESTIGATOR(S):
For further information, contact:
Technical Information Section

Dr. M. Luster

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Technical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address Including Zip Code:
Litton Bionetics, Inc.
5516 Nicholson Lane
Kensington, MD 20895

PERIOD FOR THIS NRP
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Promethazine will be tested through the prechronic phase. Prechronic studies in rats and mice began in December 1981. The compound was administered by gavage.

CAS Registry No.
Promethazine 60-87-7

TOX-TIPS JUNE 1982 73-31

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

GODOY HM ; DIAZ GOMEZ MI ; CASTRO JA
Relationship between dimethylnitrosamine metabolism or activation and its ability to induce liver necrosis in rats.
J NATL CANCER INST; 64 (3). 1980. 533-538.

REDDROP CJ ; RIESS W ; SLATER TF
Interactions of carbon tetrachloride and promethazine in the rat: 2. Elimination of carbon tetrachloride and chloroform in expired air as indications of their metabolism in the intact animal.
BIOCHEM PHARMACOL; 30 (12). 1981. 1449-1456.

REDDROP CJ ; RIESS W ; SLATER TF
Interactions of carbon tetrachloride and promethazine in the rat: 1. Effects of promethazine on the concentrations of carbon tetrachloride in blood and liver and on the production of chloroform.
BIOCHEM PHARMACOL; 30 (12). 1981. 1443-1448.

Gusdon JP Jr
The treatment of erythroblastosis with promethazine hydrochloride.
J Reprod Med; VOL 26, ISS 9, 1981, P454-8

Darwish H ; Grant R ; Haslam R ; Roth S
Promethazine-induced acute dystonic reactions.
Am J Dis Child; VOL 134, ISS 10, 1980, P990-1

Weaving EA ; Berro VE ; Kew MC
Heat stroke during a 'run for fun': A case report.
S Afr Med J; VOL 57, ISS 18, 1980, P753-4

Goldhaber P ; Rabadjija L
Effect of promethazine hydrochloride on bone resorption in tissue culture
Proc. Soc. Exp. Biol. Med.; VOL 169, ISS 1, 1982,105-9

Rogoz Z ; Skuza G ; Sowinska H
The effect of the antihistaminic drugs on the central action of 5-hydroxytryptophan in mice
Pol. J. Pharmacol. Pharm.; VOL 33, ISS 4, 1981,459-65

Woodcock AA ; Gross ER ; Geddes DM
Drug treatment of breathlessness: contrasting effects of diazepam and promethazine in pink puffers
Br. Med. J.; VOL 283 ISS Aug 1 1981, P343-346, (REF 17)

# QUARTERLY INDEX OF COMPOUNDS

This quarterly index lists compounds under test and those for which tests have been completed and published. The index will be updated and reprinted in the September, 1982 issue. Citations for compounds announced as under test give the issue number and page for TOX-TIPS. Those for which testing has been completed and published cite the journal or other report in which test data can be found.

National Toxicology Program/National Cancer Institute Bioassay Reports may be ordered from the National Technical Information Service, Springfield, Virginia 22161, using the PB-number cited.

Acetaldehyde
  Hamster - inhalation - carcinogenicity...68:19
  Hamster - intratracheal - carcinogenicity...68:19
Acetonitrile
  Short term...70:23
Airborne effluents
  Inhalation - mutagenicity - cytotoxicity...73:13
Barium chloride
  Short term...70:25
o-Benzyl-p-chlorophenol
  Mouse - short-term - carcinogenicity...72:13
  Rat - short-term - carcinogenicity...72:13
2-Bromo-4,6-dinitroaniline
  Toxicological characterization...69:9
beta-Bromo-beta-nitrostyrene
  Toxicological characterization...69:11
Butyraldehyde
  Carcinogenicity...72:11
Cadmium nitrate
  Toxicological characterization...69:13
Cadmium oxide
  Carcinogenicity...68:21
Cadmium sulfide
  Carcinogenicity...68:23
Carbon disulfide
  Mouse - inhalation - 90-day...71:39
  Rat - inhalation - 90-day...71:39
Chlorine
  Monkey - inhalation - carcinogenicity - 24-month...71:41
  Rat - inhalation - carcinogenicity - 24-month...71:41
Chloramine
  Mouse - water - long-term - carcinogenicity...72:23
  Rat - water - long-term - carcinogenicity...72:23
4-Chloro-2-nitroaniline
  Short term...70:27
Chlorothen
  Carcinogenicity...72:25
Coal combustion emissions
  Inhalation - mutagenicity - cytotoxicity...73:15

Diesel exhaust
  Inhalation - long-term - carcinogenicity - mutagenicity...73:17
Diesel particulates
  Inhalation - short-term - carcinogenicity - mutagenicity...73:17
1,8-Dihydroxy-4,5-dinitroanthraquinone
  Toxicological characterization...69:19
Dimethylamine
  Mouse - inhalation - 24-month...71:27
  Rat - inhalation - 24-month...71:27
3,3'-Dimethoxybenzidine
  Carcinogenicity...68:25
C. I. Acid Red 114
  Rat - water - short-term - carcinogenicity...72:15
C. I. Direct Blue 1
  Carcinogenicity...68:25
C. I. Direct Blue 2
  Carcinogenicity...72:17
C. I. Direct Blue 15
  Carcinogenicity...68:25
  Rat - water - carcinogenicity...68:27
C. I. Direct Blue 218
  Mouse - feed - short-term - carcinogenicity...72:19
  Rat - feed - short-term - carcinogenicity...72:19
C.I. Direct Yellow 11
  Toxicological characterization...69:15
C. I. Pigment Yellow 74
  Short-term - carcinogenicity...72:21
N, N-Dimethylformamide
  2-year - carcinogenicity...72:27
Ethylbenzene
  Toxicological characterization...69:21
n-Hexane
  Toxicological characterization...69:23
  Rat - inhalation - 90-day...71:33
Hydrogen sulfide
  Mouse - inhalation - 90-day...71:37
  Rat - inhalation - 90-day...71:37
Isobutyraldehyde
  Toxicological characterization...69:25
Manganese sulfate
  Mouse - short-term - carcinogenicity...72:29
  Rat - short-term - carcinogenicity...72:29
Methylphenidate
  Mouse - feed - short-term - carcinogenicity...72:33
  Rat - feed - short-term - carcinogenicity...72:33
Methyl bromide
  Toxicological characterization...70:5
Methyl chloride
  Rat - inhalation - long-term - Reproduction
   and fertility...71:31

Methyl ethyl ketone
  Rat - inhalation - 90-day...71:35
2-Mercaptobenzimidazole
  Rat - feed - short-term - carcinogenicity...73:25
  Toxicological characterization...69:27
Methdilazine
  Mouse - feed - carcinogenicity...72:31
  Rat - feed - carcinogenicity...72:31
Molybdenum trioxide
  Toxicological characterization...70:7
Naphthalene
  Toxicological characterization...69:7
p-Nitroaniline
  Mouse - gavage - short-term - carcinogenicity...73:23
o-Nitroanisole
  Mouse - feed - short-term - carcinogenicity...73:25
Nitrobenzene
  Mouse - inhalation - 90-day...71:29
  Rat - inhalation - 90-day...71:29
Nitrotoluene (undefined mixture)
  Carcinogenicity...73:27
Ochratoxin A
  Rat - gavage...69:5
D-phenylalanine
  Toxicological characterization...70:9
Phosgene
  Carcinogenicity...73:29
Promethazine
  Mouse - gavage - short-term - carcinogenicity...73:31
  Rat - gavage - short-term - carcinogenicity...73:31
Radionuclides
  Dog - Inhalation - carcinogenicity - mutagenicity...73:21
  Inhalation...73:19
  Rodents - Inhalation - carcinogenicity - mutagenicity...73:21
Silica
  Rat - inhalation - short-term...71:43
Sodium arsanilate
  Carcinogenicity...68:31
Sucrose
  Toxicological characterization...70:11
Talc
  Toxicological characterization...70:13
  -trans-delta(9)-Tetrahydrocannabinol
  Toxicological characterization...70:15
alpha-Tocopherol
  Toxicological characterization...70:14
2,4,5-Trichlorophenol
  Carcinogenicity...68:33
Vanadium pentoxide
  Toxicological characterization...70:19
C. I. Vat Blue 1
  Toxicological characterization...69:17

Vitamin E
  Toxicological characterization...70:17
Vinylidene fluoride
  Carcinogenicity...68:35
1-Vinyl-2-pyrrolidinone polymers
  Carcinogenicity...68:29
Zinc oxide
  Toxicological characterization...70:21

## Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
60-87-7 Promethazine...73:31
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9, 72:27
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-38-7 Vinylidene fluoride...68:35 .
75-44-5 Phosgene...73:29
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-06-1 Acrylamide...55:21, 55:23
79-11-8 Chloroacetic acid...57:19
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21

| | |
|---|---|
| 87-62-7 | 2,6-Xylidine...56:29, 59:13 |
| 87-86-5 | Pentachlorophenol...66:5 |
| 89-63-4 | 4-Chloro-2-nitroaniline...70:27 |
| 91-20-3 | Naphthalene...69:7 |
| 91-23-6 | o-Nitroanisole...73:25 |
| 91-64-5 | Coumarin...57:27 |
| 91-79-2 | Thenyldiamine (Pharmaceutical)...64:9 |
| 91-80-5 | Methapyrilene...64:15 |
| 91-81-6 | Tripelenamine...64:7 |
| 91-84-9 | Pyrilamine...64:11 |
| 92-48-8 | 6-Methylcoumarin...57:23 |
| 93-76-5 | 2,4,5-T...66:5 |
| 94-66-2 | Diethyl phthalate...57:31 |
| 94-75-7 | 2,4-D...66:5 |
| 95-50-1 | 1,2-Dichlorobenzene...55:31 |
| 95-86-3 | 2,4-Diaminophenol...64:25 |
| 95-95-4 | 2,4,5-Trichlorophenol...68:33 |
| 96-09-3 | Styrene oxide...65:17 |
| 98-85-1 | alpha-Methylbenzyl alcohol...61:23 |
| 98-95-3 | Nitrobenzene...71:29 |
| 100-01-6 | p-Nitroaniline...73:23 |
| 100-02-7 | p-Nitrophenol...65:13 |
| 100-40-3 | 4-Vinylcyclohexene...57:9 |
| 100-41-4 | Ethylbenzene...69:21 |
| 100-42-5 | Styrene...55:27 |
| 100-44-7 | Benzyl chloride...65:5 |
| 101-90-6 | Diglycidyl resorcinol ether...63:9 |
| 101-77-9 | 4,4'-Methylenedianiline...63:13 |
| 103-90-2 | 4-Hydroxyacetanilide...57:25 |
| 104-55-2 | Cinnamaldehyde...64:27 |
| 106-46-7 | 1,4-Dichlorobenzene...55:33 |
| 106-47-8 | p-Chloroaniline...60:21 |
| 106-87-6 | 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25 |
| 107-02-8 | Acrolein...59:23 |
| 107-07-3 | Ethylene chlorohydrin...58:19 |
| 107-15-3 | Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17 |
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9 |
| 110-54-3 | Hexane...55:21, 69:23, 71:33 |
| 110-80-5 | 2-Ethoxyethanol...65:3, 66:9 |
| 111-15-9 | 2-Ethoxyethanol acetate...65:3 |
| 111-30-8 | Glutaraldehyde...57:15 |
| 111-76-2 | 2-Butoxyethanol...65:3, 66:9 |
| 111-90-0 | 2-(2-Ethoxyethoxy)ethanol...65:3 |
| 113-45-1 | Methylphenidate...72:33 |
| 115-07-1 | Propylene...58:23 |
| 115-09-3 | Methylmercuric chloride...55:23 |
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27 |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 |
| | (petroleum)...66:13, 66:15 |

120-32-1 o-Benzyl-p-chlorophenol...72:13
120-40-1 Lauric acid dietholamine (con 1/1); (Bis(2-hydroxyethyl)lauramide)...61:21
121-19-7 Roxarsone...59:19
121-79-9 Propyl gallate...63:17
123-72-8 Butyraldehyde...72:11
124-40-3 Dimethylamine...71:27
124-64-1 Tetrakis (hydroxymethyl) phosphonium chloride...55:17
127-18-4 Tetrachloroethylene...56:23, 59:15
127-85-5 Sodium arsanilate...68:31
132-98-9 Penicillin V Potassium...58:7
135-88-6 N-phenyl-2-naphthalamine...62:21
136-77-6 4-Hexylresorcinol...61:17
137-09-7 2,4-Diaminophenol dihydrochloride...64:25
140-88-5 Ethyl acrylate...58:15
148-65-2 Chlorothen...72:25
150-68-5 Monuron...58:21
298-81-7 8-Methoxypsoralen...65:7
303-47-9 Ochratoxin A...62:23, 69:5
333-18-6 Ethylenediamine dihydrochloride...60:5, 60:7, 60:9
482-89-3 C.I. Vat Blue 1...69:17
469-21-6 Doxylamine...64:23
470-82-6 1,8-Cineole...64:29
509-14-8 Tetranitromethane...55:15, 56:27
518-47-8 C.I. Acid Yellow 73...58:11
542-56-3 Isobutyl nitrite...64:17
542-75-6 1,3-Dichloropropene...63:7
542-78-9 Malonaldehyde...58:17
555-30-6 Methyldopa...67:29
569-61-9 C.I. Basic Red 9, monohydrochloride...58:13
583-39-1 2-Mercaptobenzimidazole...69:27
584-84-9 2,4-Toluene diisocyanate...59:7
598-55-0 Methyl carbonate...67:27
673-06-3 D-phenylalanine...70:9
828-00-2 Dimethoxane...61:11
868-85-9 Dimethyl hydrogen phosphite...59:3
924-42-5 N-Methylolacrylamide...57:21
989-38-8 Rhodamine 6G...58:9
1271-19-8 Titanocene dichloride...60:31
1306-19-0 Cadmium oxide...68:21
1306-23-6 Cadmium sulfide...68:23
1309-37-1 Ferric oxide...62:5
1313-27-5 Molybdenum trioxide...70:7
1314-13-2 Zinc oxide...70:21
1314-62-1 Vanadium pentoxide...70:19
1317-71-1 Olivine...62:7
1325-37-7 C.I. Direct Yellow 11...69:15
1330-20-7 Xylene...62:11, 67:11
1338-23-4 2-Butanone, peroxide...62:15

1344-00-9 Sodium aluminosilicate...56:15
1406-18-4 Vitamin E...70:17
1817-73-8 2-Bromo-4,6-dinitroaniline...69:9
1854-26-8 Dimethyloldihydroxyethyleneurea...60:19
1972-08-3 -trans-delta(9)-Tetrahydrocannabinol...70:15
1982-37-2 Methdilazine...72:31
2058-46-0 Oxytetracycline hydrochloride...57:13
2385-85-5 Mirex...63:15
2425-85-6 C.I. Pigment Red 3...61:15
2429-73-4 C. I. Direct Blue 2...72:17
2429-74-5 C. I. Direct Blue 15...68:27
2429-74-5 C. I. Direct Blue 15...68:25
2475-45-8 C. I. Disperse Blue 1...65:25
2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5
5989-27-5 d-Limonene...60:27
6358-31-2 C. I. Pigment Yellow 74...72:21
6459-94-5 C. I. Acid Red 114...72:15
6471-49-4 C.I. Pigment Red 23...61:13
7166-19-0 beta-Bromo-beta-nitrostyrene...69:11
7440-41-7 Beryllium...66:11
7487-94-7 Mercuric chloride...59:31
7631-86-9 Silica...62:7, 71:43
7681-49-4 Sodium fluoride...56:19
7782-50-5 Chlorine...64:3, 71:41
7783-06-4 Hydrogen sulfide...71:37
7783-81-5 Uranium-238 hexafluoride...55:9
7785-87-7 Manganese sulfate...72:29
9002-92-0 Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5
9003-39-8 1-Vinyl-2-pyrrolidinone polymers...68:29
9005-65-6 Polysorbate 80...60:15
1321-12-6 Nitrotoluene (undefined mixture)...73:27
10028-15-6 Ozone...59:25
10098-97-2 Strontium-90...56:9
10325-94-7 Cadmium nitrate...69:13
10361-37-2 Barium chloride...70:25
10599-90-3 Chloramine...72:23
12001-28-4 Crocidolite...63:27
12001-29-5 Chrosotile...63:25
12172-73-5 Amosite...63:23
12266-32-9 Plutonium-238 dioxide...61:7, 73:21
12741-11-6 Zirconium silicate...62:7
13552-44-8 4,4'-Methylenedianiline dihydrochloride...63:13
13961-86-9 Oleic acid diethclamine salt...65:15
13968-56-4 Plutonium-239 tetranitrate...61:7, 73:21

| | |
|---|---|
| 14047-09-7 | 3,3',4,4'-Tetrachloroazobenzene...58:3 |
| 14807-96-6 | Talc...70:13 |
| 14808-60-7 | Quartz...62:5 |
| 14567-73-8 | Tremolite...63:19 |
| 15117-96-1 | Uranium-235...55:9 |
| 16127-62-1 | Amosite...63:23 |
| 16561-29-8 | 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21 |
| 19086-72-7 | Olivine...62:7 |
| 21232-47-3 | 3,3',4,4'-Tetrachloroazoxybenzene...58:3 |
| 21645-51-2 | Hydrated alumina (Aluminum hydroxide)...62:5 |
| 22840-34-2 | Plutonium-239 dioxide...56:11, 61:7, 73:21 |
| 28407-37-6 | C. I. Direct Blue 218...72:19 |
| 26628-22-8 | Sodium azide...56:31 |
| 26677-58-7 | Plutonium-239 citrate...56:11 |
| 36355-01-8 | Hexabromobiphenyl...64:13 |
| 52551-67-4 | HC Yellow No. 4...64:5 |
| 53799-46-5 | Crocidolite...63:27 |
| 58425-86-8 | Aluminum silicate...62:7 |
| 61076-97-9 | Chrysotile...63:25 |
| 61105-31-5 | Crocidolite...63:27 |
| 64741-55-5 | Light catalytic cracked naphtha...67:3, 67:5 |
| 64741-56-6 | Vacuum residuum (petroleum)...67:21 |
| 64741-62-4 | Catalytic cracked clarified oil (petroleum)...67:23 |
| 64741-63-5 | Light catalytic reformed naphtha (petroleum)...66:25, 66:27 |
| 64741-87-3 | Sweetened naphtha (petroleum)...66:17, 66:19 |
| 64742-48-9 | Hydrotreated heavy naphtha (petroleum)...67:17, 67:19 |
| 64742-80-9 | Hydrodesulfurized middle distillate (petroleum)...66:13, 66:15 |
| 64742-81-0 | Hydrodesulfurized kerosene (petroleum)...66:21, 66:23 |
| 68334-30-5 | Petroleum products, diesel oil...61:9, 73:17 |
| 68512-90-3 | Diesel test fuel...73:17 |
| 68476-34-6 | Fuels, diesel, No. 2...61:9, 73:17 |

# Supporting and Performing Organizations

American Petroleum Institute
  *Coate, W....67:7
  *Furst, A....67:25
  *Jagannath,...67:13
  *Schroeder, R.E....67:11
  *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  *Weaver, N.K....55:27
  Sponsored studies...67:23
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5, 72:13
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13
Biodynamics...67:11
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory...71:43
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S.H...60:5, 60:7, 60:9, 60:11, 60:17
  Zelenak, J.P....60:9
Central Institute for Nutrition & Food...68:19
Chemical Industry Institute of Toxicology
  *Barrow, C. S....71:27, 71:41
  *Bus, J.S....71:37, 71:39
  *Drew, R. T....71:43
  *Gralla, E....55:3, 55:5, 71:33, 71:35
  Hamm, T....71:29, 71:31
  *Kutzman, R. S....71:43
  *Stack, C.R....55:27, 55:29, 55:31, 55:33
  Sponsored studies...71:27, 71:29, 71:31
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15, 72:23, 72:29
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23, 72:15
  Coate, W. B....55:25
Hazelton Raltec Inc....72:33, 73:23, 73:25
Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute 73:13, 73:15, 73:17, 73:19, 73:21
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9, 73:13, 73:15
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp....57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17, 72:19,
  Ulrich, C....71:41
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13, 72:31, 73:31
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
Morgantown Energy Technology Center...73:13, 73:15,
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
National Institute of Environmental
  Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3

*Project Officer/Compound Manager

National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19
*Brown, D....55:9
*Boeniger, M....55:11
*Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
*Cox, C....60:3
*Donaldson, H....66:3
*Elliott, L....56:3, 56:7
*Herrick, B....60:3
*Honchar, P....66:5
Lewis, T. R....62:5
Nelson, B.K....65:3
*Reeve, G....66:7
*Okun, A....66:11
*Robinson, C....55:7
*Rosenberg, M....66:9
Stern, F. B....62:3
*Taylor, P....55:13
Wagner, W. D....62:9
*Whalen, J....56:5
*Whitmire, C....55:15
Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
National Institutes of Health
Sponsored studies...61:3
National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21, 72:11, 72:17, 72:25, 72:27, 73:27, 73:29
*Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
*Birnbaum, L....59:9, 72:13
*Brown, S....69:7, 70:13
*Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15, 73:23, 73:25
*Chu, K....69:9, 70:5
*Creasia, D....65:5, 65:17, 65:23
*Dean, J....60:17, 65:11
*Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
*Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
*Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23
*Eastin, W....69:5, 69:5, 69:15, 72:21
*Goldman, D....70:15, 72:31
*Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29
*Gupta, B....59:5, 70:25
*Hartwell, W....58:5, 59:19, 59:21, 60:21
*Huff, J....63:15, 64:33
*Irwin, R....59:29, 64:25, 65:13, 69:19

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

 *Jackson, C....64:17
 *Jameson, C. W....55:17, 60:27, 63:3
 *Kluwe, W. M....57:5, 65:9, 72:33
 *Lamb, J. C....57:29, 63:13
 *Luster, M....73:31
 *Matthews, H....59:11, 59:27, 65:21
 *McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
 *McCoy, J.L....60:19, 69:25, 70:23, 70:27
 *Melnick, R....56:21, 59:17, 63:11
 *Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17, 72:15, 72:19
 *Moorman, W....70:21
 *Niemeier, R....70:19
 *Padarathsingh, M....62:19
 *Plotnick, H....69:21
 *Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
 *Quest, J....67:27, 69:27, 70:7
 *Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
 *Van Stee, E....60:13
 *Walters, D....72:29
 *Ward, J.M....58:17, 58:19, 58:21, 61:11
 *Weber, H....69:11
 *Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11, 72:23
  Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
 Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5, 71:33, 71:35
  Morgan, J. M....71:37, 71:39
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29, 72:23

*Project Officer/Compound Manager

Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

**Contract No:**
**and/or**
**Control No:**

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

**Start Date:**
**End Date:**
**Annual Funding:**

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

### Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

### Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

### Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

### Performing Organization

Enter name of organization where work is actually being done.

### Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

### Project Summary

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

### Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

| | |
|---|---|
| SUPPORTING ORGANIZATION: | SUPPORTING ORGANIZATION NUMBER(S):<br>**Contract No:**<br>**and/or**<br>**Control No:** |
| PROJECT TITLE: | |
| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
| PERFORMING ORGANIZATION:<br>Name and Address.<br>Including Zip Code. | PERIOD FOR THIS NRP:<br>**Start Date:**<br>**End Date:**<br>**Annual Funding:** |
| PROJECT SUMMARY: | |

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

**Supporting Organization**

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

**Project Title**

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

**Investigator(s)**

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

**Performing Organization**

Enter name of organization where work is actually being done.

**Start Date, End Date and Annual Funding**

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

**Project Summary**

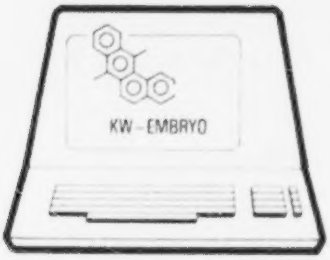
Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

**Send All Notices of Research Projects Directly To:**

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

☆U.S. GOVERNMENT PRINTING OFFICE: 1982 361-576/507 1-3



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# TOXLINE

TOXICOLOGY INFORMATION ONLINE

# CONDENSED

---

Bethesda, Maryland 20209

---

**TOXLINE DEFINED**

TOXLINE (TOXicology Information on-LINE) is the National Library of Medicine's extensive collection of computerized toxicology information containing over 400,000 references to published human and animal toxicity studies, effects of environmental chemicals and pollutants, adverse drug reactions, and analytical methodology. This rapidly expanding data base, assembled by the Toxicology Information Program and updated monthly, contains full bibliographic citations, almost all with abstracts and/or indexing terms, and Chemical Abstracts Service (CAS) Registry Numbers. TOXLINE grows at the rate of approximately 140,000 records/year. Older information is in the TOXLINE backfiles, TOXBACK74 (1974–1978, with over 350,000 references) and TOXBACK65 (pre–1965 through 1973, with 387,377 references). TOXLINE information is derived from five major secondary sources (1–5) and six special collections (6–11) of material. The component subfiles included in TOXLINE and its backfiles are:

1) Chemical Abstracts Service "Chemical-Biological Activities" (CBAC), from 1965. Also Section 8 (Radiation Biochemistry), Section 59 (Air Pollution and Industrial Hygiene), Section 60 (Sewage and Waste), Sections 62–64 (Essential Oils and Cosmetics, Pharmaceuticals, and Pharmaceutical Analysis), from 1975

2) BioSciences Information Service "Abstracts on Health Abstracts on Health Effects of Environmental Pollutants" (HEEP), from 1972

3) American Society of Hospital Pharmacists "International Pharmaceutical Abstracts," (IPA), from 1970

4) National Library of Medicine "Toxicity Bibliography" (TOXBIB), from 1968

5) Environmental Protection Agency "Pesticides Abstracts", (formerly "Health Aspects of Pesticides Abstract Bulletin) (PESTAB, formerly HAPAB), from 1966 through 1981

6) Environmental Mutagen Information Center File (EMIC), Oak Ridge National Laboratory, from 1950, (all in TOXLINE)

7) Environmental Teratology Information Center File (ETIC), Oak Ridge National Laboratory, from 1950, (all in TOXLINE)

8) Smithsonian Science Information Exchange, Toxicology/Epidemiology Research Projects (RPROJ), from 1979

9) National Technical Information Service, Toxicology Document and Data Depository (TD3), beginning October 1979

10) Hayes File on Pesticides (HAYES), 1940–1966 in TOXBACK65

11) Toxic Materials Information Center (TMIC) file, Oak Ridge National Laboratory, 1971–1975 in TOXBACK65

## TOXLINE SEARCHED

Citations on a given subject may be retrieved from TOXLINE by entering the desired free text terms as they appear in titles, keywords, and abstracts of articles. Chemical substances can be searched by entering their corresponding Chemical Abstracts Service (CAS) Registry Numbers, and/or synonyms, obtained from the CHEMLINE file. There is no controlled vocabulary governing the inclusion or exclusion of terms in TOXLINE. Terms may be entered as a single term or combined by means of the Boolean operators AND, OR and AND NOT. Searches may be limited to specific publication years. Citations and abstracts may be printed online at the user's terminal, or offline and mailed to the user from NLM. Users may select a print format varying from a brief identification of author(s), title, and source to a complete listing of the bibliographic record, including the abstract. Citations may be SORTed at the user's initiation in OFFSEARCH or offline printing.

## TOXLINE AVAILABILITY

TOXLINE is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 5:00 P.M. (Eastern Time.)

## TOXLINE COST

The cost of access to TOXLINE and its backfiles is $52 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $45 per hour at all other times. There is a charge of $0.35 for each page of offline printout.

## TOXLINE USER SERVICES

For Online Systems services including access to the TOXLINE file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For TOXLINE content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–1131

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

74

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

NEWARK PUBLIC LIBRARY

OCT 1 9 1982

U. S. GOVT. PUBS.
DEPOSITORY 376

PB82-915007
NUMBER 74
JULY 1982

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## TABLE OF CONTENTS

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
11 Tests for Toxicologic and Carcinogenic Effects. Status of Propantheline Bromide
13 Tests for Toxicologic and Carcinogenic Effects. Status of Seneciphylline
15 Tests for Toxicologic and Carcinogenic Effects. Status Riddelliine
17 Tests for Toxicologic and Carcinogenic Effects. Status of Tetrahydrofuran
19 Tests for Toxicologic and Carcinogenic Effects. Status of Triamterene
21 Tests for Toxicologic and Carcinogenic Effects. Status of 1,2,3-Trichloropropane
23 Tests for Toxicologic and Carcinogenic Effects. Status of Tricresyl Phosphate
25 Tests for Toxicologic and Carcinogenic Effects. Status of Tungsten Carbide
27 INDEX OF COMPOUNDS
28 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
33 SUPPORTING AND PERFORMING ORGANIZATIONS
38 TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)
39 SYMPOSIUM ON INFORMATION TRANSFER IN TOXICOLOGY
41 NOTICE OF RESEARCH PROJECT BLANK FORM
43 RTECS CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20.3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:

| | |
|---|---|
| North American Continent addresses | $40 |
| All others | $80 |

Bulk rates available on request from NTIS

## FROM THE EDITOR

The 1980 printed version of the NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) is now available. This publication supersedes all previous printed editions of the Registry. Order the new RTECS from:

Superintendent of Documents
U.S. Government Printing Office (GPO)
Washington, D.C. 20402

Specify GPO Stock Number 017-033-00399-8. The domestic price is $27 and payment must be made by GPO deposit account, check payable to the Superintendent of Documents, or charge to your VISA or Mastercard account. For information about charging the GPO order, telephone 202-783-3238. The non-U.S. order price is $33.75.

The Registry is a compendium of toxicity data extracted from the scientific literature. It also includes references to existing Federal standards for each substance as well as to testing programs under which the chemical is being evaluated. There is also a computerized version of this information, and this RTECS database is available from the National Library of Medicine as part of the MEDLARS system. Please see the inside back cover of this issue for a more complete desciption of the RTECS online version. For additional information regarding access to the database, contact

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, MD 20209
Telephone (301)496-6193

Carol B. Haberman
EDITOR, TOX-TIPS

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

## JOURNAL REFERENCES

Kast, A. and Nishikawa, J. The effect of fasting on oral acute toxicity of rats and mice. *Lab Anim.* 15, 359-64, 1981.

The oral toxicity of drugs was determined in rats allowed to feed ad libitum and in rats of the same age and strain fasted for 17-20 hr. In the case of the three beta-adrenergic stimulants tested, toxicity was increased 1.3-4.7 times by fasting. This effect was believed to be due to "...accelerated gastric emptying and intestinal absorption..." in the fasted rats since the toxicity of i.p drugs was the same in fasted and fed rats.

Strubelt, O. et al. Influence of fasting on the susceptibility of mice to hepatotoxic injury. *Toxicol Appl Pharmacol 60* 66-77, 1981.

Hepatotoxic effects of drugs were followed by monitoring the serum levels of glutamic oxaloacetic transaminase (GOT), glutamic pyruvic transaminase (GPT) and sorbitol dehydrogenases (SDH) in the serum from "...normally fed and 24-h-fasted mice". Toxicity was increased in the fasted animals. Depletion of liver glycogen and GSH and accumulation of lipid in the liver are among the factors that must be considered responsible for the difference in toxicity. Since overnight fasting may change the toxic effects of drugs upon the liver, it should be avoided.

Sunderman, F. W. Jr. Biochemical indices of renal toxicity. Meeting on chemical indices and mechanisms of organ-directed toxicity, Barcelona, Spain, March 4-7, 1981. *Gen Pharmacol 12,* 1981.

Among the topics discussed were caffeine, phenacetin, gentamicin, cadmium, and nickel toxicities, urine creatinine, heme oxygenase, beta-n acetyl glucosaminidase, beta-2 microglobulin, smoking, occupational health and environmental toxicity.

Cook, T. H. Profilometry of skin...useful tool for the substantiation of cosmetic efficacy. *J Soc Cosmet Chem 31,* 339-359, 1980.

Profilometry, a method of evaluating surface texture to obtain quantitative measures of the surface texture of the horny layer of skin, is reviewed. Instruments used, replication methods, roughness parameters and methods of evaluating the data are all considered. Such techniques could also be applied to some studies of skin toxicity.

Berezina, O. V. and Goev, A. A. Evaluation of heavy metal toxicity by a behavioral method. *Gig Sanit (1)*, 42-46, 1982.

Kurokawa, M., Iwamoto, H. and Hasegawa, I. KI-chamber patch test unit. *J Soc Cosmet Chem 31*, 97-104, 1980.

Results of comparing the KI-unit with Al-test and the Finn chamber in testing the responses of volunteers to skin irritants suggest that the KI-unit is a useful device for testing skin irritation and allergic responses.

Olson, J. Some methodologic problems encountered in occupational health research. *Scand J. Soc Med 9*, 19-24, 1981.

The proper interpretation of studies in occupational health research is hampered by a number of sources of error which are not always fully considered in designing the study. Bias may be of particular importance in the selection of healthy workers, in information gathering, and in the differential distribution of health services in the workplace. Also of importance is a knowledge of how the diseases have been diagnosed.

Minkina, N. A. et al. Possibility of predicting indirect consequences of the effect of harmful chemical substances upon the organism. *Aktual'n Probl Gigienich Toksikol* 73-79, 1980.

Subjects considered were evaluation of carcinogens, mutagens, embryotoxic chemicals, gonadotoxical chemicals, and chemical toxicity in general.

Hatakeyama, S. and Yasuno, M. A method for assessing chronic effects of toxic substances on the midge Paratanytarsus parthenogeneticus --effects of copper. *Arch Environ Contam Toxicol 10,* 705-13, 1981.

> Copper was used as the test substance in studying the chronic effects of a poison on midge larva. Growth, amount of food taken up, and reproductive ability were all affected. The first two factors were inversely related to the copper content and 50% reproductive impairment occurred at copper contents greater than 0.37 mg/.

Ware, G. S., Parrish, P. R. and Risby, R. A. Early life stage toxicity with a saltwater fish: effects of eight chemicals on survival, growth and development of sheepshead minnows (Cyprinodon variegatus). *J Toxicol Environ Health 8,* 225-40, 1981

> Toxicity tests of the chemical effects on survival, growth, and development were determined in flow-through, acute (96h), and early life stages of sheepshead minnows. Six chemicals were used and these results compared with those obtained previously with the same chemicals on six species of aquatic organisms.

Alarie, Y. Dose-response analysis in animal studies: prediction of human responses. *Environ Health Perspect 42,* 8-13, 1981.

> A group of airborne chemicals which irritate the upper respiratory tract was assayed for their effects in animals. The results were used to rank the potency of the chemicals and to predict a safe level of exposure for human beings. These safe levels correlated well with the current Threshold Limit Values published for these compounds.

Selven, S. G. Design considerations in pregnancy outcome studies of occupational population. *Scand J Work Environ Health 7,* 76-82, 1981.

Studies of pregnancy outcome are usually retrospective and cover an extended period of time. This type of design arises due to the combination of work force size, exposure, age distribution, and marital status. All of the data sources for such studies such as interviews, medical records, insurance data and vital statistics suffer from bias. The factors producing bias may be errors in determining exact fetal outcome such as early fetal loss, requirements for recording vital statistics, and differences in health care patterns.

Yano, E., Yoshioka, M. and Koizumi, A. Relationship between chemical structure and cytotoxicity of aliphatic amines examined by a microtiter system with cultured fibroblasts. *Sangyo Isaku 23*, 537-44, 1981.

Human fibroblasts were used to assay cytotoxicity of aliphatic amines in relation to their chain length. Regression curves of minimum inhibitory concentration on length of chain as expressed in carbon number revealed that the type of curve differed from that derived for diamines. The chromatographic hydrophobic parameter (RM) was derived. It was found that this value makes it easier to obtain the partition coefficient for the compounds. The authors, moreover, report on "...a newly developed microtiter system...". This system is rapid and may be used "...for the evaluation of the toxicity of chemicals especially in terms of a preliminary screening test".

Balster, R. L. and Woolverton, W. L. Unlimited access intravenous drug self-administration in rhesus monkeys. *Fed Proc 41*, 211-5, 1982.

The toxic consequences of self-administered drugs are revealed by studies using unlimited access in rhesus monkeys. The results as illustrated by data on phencyclidine suggest "...a pattern of drug intake that progresses from varibale day-to-day response rates at a low dose to relatively stable daily response rates at low dose with greater drug intake at a higher dose".

**Hinton, D. E. et al.** In vitro evaluation of the channel catfish Ictalurus punctatus (rafinesque) as a test species in chemcial carcinogenesis studies. *ASTM Spec Tech Publ 737,* 226-38, 1981. *Iss Aquat Toxicol Hazard Assess.*

> Isolated subcellular fractions of liver from channel catfish were made to study the carcinogens produced from various chemicals such as benzo[a]pyrene. The results of this study demonstrate the ability of the subcellular fraction to "...metabolize carcinogens into mutagenic forms. Thus activation reactions could result in the initiation of carcinogenesis within the intact liver..." This species appeared suitable for carcinogen bioassay.

Gray, J. E. Appraisal of the intramuscular irritation test in the rabbit. *Fundam Appl Toxicol 1,* 290-292, 1981.

> Human tolerance for i.m. administered drugs may be predicted from the muscular irritant tests in rabbits. The test includes gross and microscopic characterization of the lesion, as well as measures of creatine phosphokinase (CPK) following a single injection of the drug being studied. CPK activities up to and including 2000-3000 IU/liter are considered to indicate slight irritation and to be predictive of human tolerance. Animals are routinely scored at 24 hr., and 3 and 7 days as well.

---

## AVAILABLE MATERIALS

Sadee, W. and Beelen, G. C. M. Analytical techniques, metabolism and pharmacokinetics. Published by John Wiley and Sons, New York, N.Y.

Kaiser, H. Species-specific potential of invertebrates for toxicological research. Complimentary copies are available from Dr. Arthur A. Wykes, Specialized Information Services, Lister Hill Center, Room 3N-303, National Library of Medicine, Bethesda, MD 20209.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
Contract No: and/or Control No: NCI No. C56257
NTP No. 10271-E

**PROJECT TITLE:**
Tests for Toxicologic and Carcinogenic Effects. Status of Propantheline Bromide

**INVESTIGATOR(S):**
For further information, contact
Technical Information Section
Dr. J. Dunnick

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
Name and Address. Including Zip Code. International Research and
Development Corporation
Mattawan, MI 49071

**PERIOD FOR THIS NRP:**
Start Date:
End Date:
Annual Funding:

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Propantheline bromide is being administered to rats and mice in the feed. Prechronic testing began during January 1982.

CAS Registry No.
Propantheline bromide 50-34-0

TOX-TIPS JULY 1982 74-11

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Hannuksela M
Allergy to propantheline in an antiperspirant (Ercoril lotion).
Contact Dermatitis; VOL 1, ISS 4, 1975, P244

Osmundsen PE
Concomitant contact allergy to propantheline bromide and TCC.
Contact Dermatitis; VOL 1, ISS 4, 1975, P251-2

CARTER MP ; WILSON FW
"ANCOLOXIN"AND FETAL ABNORMALITIES
BR MED J; 2:1609,1962

MELLIN GW
DRUGS IN THE FIRST TRIMESTER OF PREGNANCY AND THE FETAL LIFE OF HOMO SAPIENS
AM J OBSTET GYNECOL; 90:1169-1180,1964

van de Loo W
[Clinical treatment of inflammatory and benign ulcerous diseases of the stomach and duodenum with a new combination preparation (Aci-Tensilan) (author's transl)]
Munch Med Wochenschr; VOL 118, ISS 9, 1976, P271-4

Cameron JL ; Gayler BW ; Hendrix TR
The use of intramuscular propantheline in the short bowel syndrome.
Johns Hopkins Med J; VOL 138, ISS 3, 1976, P91-5

Miller RE ; Chernish SM ; Brunelle RL
Gastrointestinal radiography with glucagon.
Gastrointest Radiol; VOL 4, ISS 1, 1979, P1-10 (REF: 81)

Guth PH ; Aures D ; Paulsen G
Topical aspirin plus HCl gastric lesions in the rat. Cytoprotective effect of prostaglandin, cimetidine, and probanthine.
Gastroenterology; VOL 76, ISS 1, 1979, P88-93

Acharya SR K ; Rao S
Dual action of antimuscarinic agents on the intestinal smooth muscle
J. Postgrad. Med. (Bombay); VOL 25, ISS 1, 1979,12-14

Evander A ; Ihse I ; Lundquist I
Influence of anticholinergic treatment on rat pancreatic protein and amylase concentrations
Scand. J. Gastroenterol.; VOL 14, ISS 1, 1979,115-17

Vose CW ; Ford GC ; Grigson SJ W ; Haskins NJ ; Prout M
Stevens PM ; Rose DA ; Palmer RF ; Rudel H
Pharmacokinetics of propantheline bromide in normal man
Br. J. Clin. Pharmacol.; VOL 7, ISS 1, 1979,89-93

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61165
NTP No. 10238-A

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Seneciphylline

INVESTIGATOR(S):

For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Seneciphylline has been replaced by Riddelliine in the test program.

CAS Registry No.
Seneciphylline 480-81-9

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Buhler DR ; Cheeke PR ; Miranda C ; Reed RL ; Ramsdell HS
Swick RA
METABOLISM AND TOXICITY OF PYRROLIZIDINE ALKALOIDS
Toxicology Research Projects Directory, Vol.06 iss.01 1981

YAMANAKA H ; NAGAO M ; SUGIMURA T ; FURUYA T ; SHIRAI A
MATSUSHIMA T
MUTAGENICITY OF PYRROLIZIDINE ALKALOIDS IN THE
SALMONELLA/MAMMALIAN-MICROSOME TEST
MUTAT RES; 68:211-216,1979

WALTON MF ; CUMMING RB
ARE PYRROLIZIDINE ALKALOIDS A GENETIC HAZARD TO THE HUMAN
POPULATION
MUTAT RES; 53:104-105,1978

AVANZI S
CHROMOSOME BREAKAGE BY PYRROLIZIDINE ALKALOIDS AND MODIFICATION
OF THE EFFECT BY CYSTEINE
CARYOLOGIA; 14:251-261,1961

INT AGENCY RES CANCER
IARC (International Agency for Research on Cancer) Monographs.
Evaluation of Carcinogenic Risk of Chemicals to Man, Vol. 10.
Some naturally occurring substances. Meeting. Lyon, France, Oct.
7-13, 1975.
IARC (INT AGENCY RES CANCER) MONOGR; 1976 353

Seneciphylline.
IARC Monogr Eval Carcinog Risk Chem Man; VOL 10, 1976, P319-25
(REF: 23)

SMITH LW ; CULVENOR C CJ
PLANT SOURCES OF HEPATO TOXIC PYRROLIZIDINE ALKALOIDS
J NAT PROD (LLOYDIA); 44 (2). 1981. 129-152.

HUXTABLE R ; STILLMAN A ; CIARAMITARO D
1ST CASES OF PYRROLIZIDINE ALKALOID POISONING IN THE USA
PHARMACOLOGIST; 19 (2). 1977 181

HIRONO I
NATURAL CARCINOGENIC PRODUCTS OF PLANT ORIGIN
CRIT REV TOXICOL; 8 (3). 1981. 235-266.

EASTMAN DF ; SEGALL HJ
Effects of the pyrrolizidine alkaloids senecionine, retrorsine
and seneciphylline on aminopyrine N-demethylase activity of the
rat liver S-10 fraction.
TOXICOL LETT (AMST); 8 (4-5). 1981. 217-222.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No: and/or Control No:** NCI No. C61358
NTP No. 10237-W

**PROJECT TITLE:**

Tests for Toxicologic and Carcinogenic Effects. Status of Riddelliine

**INVESTIGATOR(S):**

For further information, contact
Technical Information Section
Dr. D. Goldman

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

**Name and Address. Including Zip Code.** Hazelton Raltech Inc.
Madison, WI 53704

**PERIOD FOR THIS NRP:**

**Start Date:** September 1981
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

Riddelliine has been scheduled for testing through the subchronic phase only as part of the NTP testing program. This phase includes characterization by general toxicity, chemical disposition, and genetic toxicity. The chemical is being administered to rats and mice by gavege. Prechronic testing was scheduled to begin during June 1982.

CAS Registry No.
Riddelliine 23246-96-0

**The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.**

SMITH LW ; CULVENOR C CJ
PLANT SOURCES OF HEPATO TOXIC PYRROLIZIDINE ALKALOIDS
J NAT PROD (LLOYDIA); 44 (2). 1981. 129-152.

HUXTABLE RJ
HERBAL TEAS AND TOXINS NOVEL ASPECTS OF PYRROLIZIDINE POISONING IN THE USA
PERSPECT BIOL MED; 24 (1). 1980. 1-14.

Schoental R ; Pullinger BD
Alleged estrogenic and other medicinal properties of pyrrolizidine (Senecio) alkaloids
East Afr. Med. J.; VOL 49, ISS 6, 1972,436-9

SEGALL HJ ; MOLYNEUX RJ
Identification of pyrrolizidine alkaloids (Senecio longilobus).
RES COMMUN CHEM PATHOL PHARMACOL; 19 (3). 1978 545-548

INT AGENCY RES CANCER
IARC (International Agency for Research on Cancer) Monographs. Evaluation of Carcinogenic Risk of Chemicals to Man, Vol. 10. Some naturally occurring substances. Meeting. Lyon, France, Oct. 7-13, 1975.
IARC (INT AGENCY RES CANCER) MONOGR; 1976 353

Riddelliine.
IARC Monogr Eval Carcinog Risk Chem Man; VOL 10, 1976, P313-7
(REF: 8)

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No: and/or Control No:** NCI No. C60560
NTP No. 10170-V

**PROJECT TITLE:**

Tests for Toxicologic and Carcinogenic Effects. Status of Tetrahydrofuran

**INVESTIGATOR(S):**

For further information, contact
Technical Information Section
Dr. B. Gupta

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

**Name and Address, Including Zip Code.** Gulf South Research Institute
New Iberia, LA 70560

**PERIOD FOR THIS NRP:**

**Start Date:**

**End Date:**

**Annual Funding:**

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Tetrahydrofuran is being administered to rats and mice by gavage. Prechronic testing began during January 1982.

CAS Registry No.
Tetrahydrofuran 109-99-9

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have nct been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Nishiuchi Y
Toxicity of pesticides to some aquatic animals. II. Toxicity of several solvents to carp and Daphnia
Seitai Kagaku; VOL 4, ISS 3, 1981,45-7

FLORIN I ; RUTBERG L ; CURVALL M ; ENZELL CR
SCREENING OF TOBACCO SMOKE CONSTITUENTS FOR MUTAGENICITY USING THE AMES' TEST
TOXICOLOGY; 15:219-232,1980

Anderson RA ; Harland WA
The analysis of volatiles in blood from fire fatalities
Forensic Toxicol., Proc. Eur. Meet. Int. Assoc. Forensic Toxicol.; 1980,279-92

MCMAHON RE ; CLINE JC ; THOMPSON CZ
ASSAY OF 855 TEST CHEMICALS IN TEN TESTER STRAINS USING A NEW MODIFICATION OF THE AMES TEST FOR BACTERIAL MUTAGENS
CANCER RES; 39:682-693,1979

Horiguchi S ; Teramoto K ; Katahira T ; Ohashi Y ; Nakai Y
Experimental study of the effects of tetrahydrofuran exposure on nasal and tracheal epithelium in rats
Seikatsu Eisei; VOL 25, ISS 4, 1981,176-7

MARON D ; KATZENELLENBOGEN J ; AMES BN
COMPATIBILITY OF ORGANIC SOLVENTS WITH THE SALMONELLA/MICROSOME TEST
MUTAT RES; 88:343-350,1981

Lewis FA
Hazard evaluation and technical assistance report No. TA 79-10, Environmental Protection Agency, Beltsville Agricultural Research Center, Beltsville, Maryland
Report; ISS NIOSH/TA-79-10; Order No. PB80-148174,, 1979,13 pp.

Rubin IB ; Griest WH ; Eatherly WP
Preparation and relative aromatic composition of petroleum and coal tar pitch extracts for mutagenicity testing
Ext. Abstr. Program - Bienn. Conf. Carbon; VOL 14,, 1979,65-6

Tharr DG ; Donnohue M
Health Hazard Evaluation Report No. HE-79-80, 81-746, at Cobe Laboratories, Inc., Lakewood and Arvada, Colorado
Govt Reports Announcements & Index (GRA&I), Issue 06, 1982

DEWALLE FB ; CHIAN E SK
DETECTION OF TRACE ORGANICS IN WELL WATER NEAR A SOLID WASTE LANDFILL
AM WATER WORKS ASSOC J; 73 (4). 1981. 206-211.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: NCI No. C56042
and/or NTP No. 10276-Y
Control No:

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects. Status of Triamterene

INVESTIGATOR(S):

For further information, contact
Technical Information Section
Dr. C. Whitmire

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.
International Research and
Development Corporation
Mattawan, MI 49071

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Triamterene is being administered to rats and mice via their feed. Prechronic testing began during January 1982.

CAS Registry No.
Triamterene 396-01-0

**The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.**

White DJ ; Nancollas GH
Triamterene and renal stone formation.
J Urol; VOL 127, ISS 3, 1982, P593-7

Jick H ; Dinan BJ ; Hunter JR
Triamterene and renal stones.
J Urol; VOL 127, ISS 2, 1982, P224-5

Werness PG ; Bergert JH ; Smith LH
Triamterene urolithiasis: solubility, pk, effect on crystal
formation, and matrix binding of triamterene and its metabolites.
J Lab Clin Med; VOL 99, ISS 2, 1982, P254-62

Lucas C ; Cukier J ; Daudon M ; Protat MF ; Reveillaud RJ
[Triamterene induced nephrolithiasis (author's transl)]
J Urol (Paris); VOL 88, ISS 1, 1982, P37-42 (REF: 74)

KAWACHI T ; YAHAGI T ; KADA T ; TAZIMA Y ; ISHIDATE M ; SASAKI M
SUGIYAMA T
COOPERATIVE PROGRAM ON SHORT-TERM ASSAYS FOR CARCINOGENICITY IN
JAPAN
IARC(INT AGENCY RES CANCER)SCI PUBL; 27:323-330,1980

Mehta B ; Robinson B
Lithium toxicity induced by triamterene and hydrochlorothiazide
Postgrad. Med. J.; VOL 56 ISS Nov 1980, P783-784, (REF 14)

Ettinger B ; Oldroyd NO ; Sorgel F
Triamterene nephrolithiasis
J. Am. Med. Assoc.; VOL 244 ISS Nov 28 1980, P2443-2445, (REF 6)

POSNER HS
SIGNIFICANCE OF CLEFT PALATE INDUCED BY CHEMICALS IN THE RAT AND
MOUSE
FOOD COSMET TOXICOL; 10:839-855,1972

MAASS AR ; WIEBELHAUS VD ; SOSNOWSKI G ; JENKINS B ; GESSNER G
EFFECT OF TRIAMTERENE ON FOLIC REDUCTASE ACTIVITY AND
REPRODUCTION IN THE RAT
TOXICOL APPL PHARMACOL; 10:413-423,1967

Bailey RR ; Lynn KL ; Drennan CJ ; Turner GA
Triamterene-induced acute interstitial nephritis [letter]
Lancet; VOL 1, ISS 8265, 1982, P226

Buffet C ; Chaput JC ; Labayle D ; Etienne JP
[Pancytopenia induced by triamterene: 4 cases (letter]
Gastroenterol Clin Biol; VOL 5, ISS 12, 1981, P1197-8

Ganguly A ; Weinberger MH
Triamterene-thiazide combination: alternative therapy for primary
aldosteronism
Clin. Pharmacol. Ther.; VOL 30 ISS Aug 1981, P246-250, (REF 22)

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C60220
NTP No. 10914-F

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of 1,2,3-Trichloropropane

INVESTIGATOR(S):
For further information, contact
Technical Information Section

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
Hazelton Laboratories
9200 Leesburg Pike
Vienna, VA 22180

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

1,2,3-Trichloropropane is being administered to rats and mice by gavage. Prechronic testing began during February 1982.

CAS Registry No.
1,2,3-Trichloropropane 96-18-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Shcherban NG ; Piten'ko NN
Effect of trichloropropane and pentachloropropane on the body of warm-blooded animals
Tr. Khar'k. Med. Inst.; VOL 124,, 1976,27-9

Bonashevskaya TI ; Belyaeva NN ; Tsulaya VR ; Shaipak VM
Structural and histochemical changes in the liver following exposure to some chlorinated hydrocarbons
Deposited Doc.; ISS VINITI 3169-76,, 1976,18 pp.

Shaipak VM
Biological effect of chlorinated hydrocarbon on animals following their inhalation
Sb. Tr., Nauchno-Issled. Inst. Gig. Tr. Profzabol., Tiflis; VOL 15,, 1976,194-6

BELYAEVA NN ; BONASHEVSKAYA TI ; MARSHAK TL ; BRODSKII VYA
INVESTIGATION OF THE EFFECT OF CERTAIN CHLORINATED HYDROCARBONS ON THE COMPOSITION OF THE HEPATOCYTE POPULATION OF THE RAT LIVER
BULL EXP BIOL MED(USSR); 83:396-400,1977
(TRANSLATED FROM BYULL EKSP BIOL MED 83:345-348,1977)

BONASHEVSKAYA TI ; BELYAEVA NN ; BRODSKII VYA ; MARSHAK TL
TSULAYA VR
POLYPLOIDY AS A MECHANISM OF COMPENSATION IN THE PRESENCE OF CHEMICAL FACTORS OF THE ENVIRONMENT
GIG SANIT; (12):81-83,1977

BELYAEVA NN ; TSULAYA VR ; MARSHAK TL ; BRODSKII VYA
EFFECT OF 1,2,3-TRICHLOROPROPANE ON THE PLOIDY OF RAT LIVER CELLS
BULL EXP BIOL MED(USSR); 78:1414-1416,1974
(TRANSLATED FROM BYULL EKSP BIOL MED 78(12):74-77,1974)

Hardin BD ; Bond GP ; Sikov MR ; Andrew FD ; Beliles RP
Niemeier RW
Testing of selected workplace chemicals for teratogenic potential.
Scand J Work Environ Health; VOL 7 Suppl 4, 1981, P66-75

Stolzenberg SJ ; Hine CH
Mutagenicity of 2- and 3-carbon halogenated compounds in the Salmonella/mammalian-microsome test.
Environ Mutagen; VOL 2, ISS 1, 1980, P59-66

KONEMANN H
Quantitative structure-activity relationships in fish (Poecilia reticulata) toxicity studies: 1. Relationship for 50 industrial pollutants.
TOXICOLOGY; 19 (3). 1981. 209-222.

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

**NATIONAL LIBRARY OF MEDICINE**
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NCI No. C61041
NTP No. 10277-D

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects. Status of Tricresyl Phosphate

INVESTIGATOR(S):
For further information, contact
Technical Information Section
Dr. R. Irwin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code. Battelle Columbus Laboratory
Columbus, OH 43201

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Tricresyl phosphate is being administered by gavage to rats and mice. Prechronic testing began during February 1982.

CAS Registry No.
Tricresyl phosphate 1330-78-5

TOX-TIPS JULY 1982 74-23

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

ET AL. ; GEOFFROY H
Myelopolyneuritis due to tricresyl phosphate. Mass poisoning in Morocco in 1959.
Presse Medicale; 68:1474-1476;1960

ROSSIN SA
Neurological symptoms in tricresyl phosphate poisoning.
Klin. Med.; 45:133-7 (Mar);1967

GLASS P
A morphological and neurological analysis of neurotoxicity illustrated by tricresyl phosphate intoxication in the chick.
Proc. Eur. Soc. Study Drug Toxicity; 8:136-48;1967

Dollahite JW ; Pierce KR
Neurologic disturbances due to triaryl phosphate toxicity
Am. J. Vet. Res.; VOL 30, ISS Aug 1969, P1461-1464; (REF:3)

K"onig L
[Late lesions following tricresyl phosphate poisonings. Results of retrospective studies of 32 patients taken ill during the period 1941-1949]
Nervenarzt; VOL 40, ISS 4, 1969, P163-76

Aizenshtadt VS ; Kalinina VI ; Guseva EG
Hygienic working condition for workers in the tricresyl and trixylenyl phosphate production
Vopr. Gig. Tr., Profpatol. Toksikol. Proizvod. Ispol'z. Fosfororg. Plastif.; 1973,19-22

Ul'yanov AA
Hygienic standardization of organophosphoric plasticizers and tricresyl phosphate
Vopr. Gig. Tr., Profpatol. Toksikol. Proizvod. Ispol'z. Fosfororg. Plastif.; 1973,27-9

KLEINFELD M ; TABERSHAW IR
Manufacture of tricresyl phosphate and other alkyl phenyl phosphates: An industrial hygiene study. II. Clinical effects of tricresyl phosphate.
A.M.A. Arch. Ind. Health; 15(6):541-544;1957

HUNTER D
Toxic polyneuritis arising during the manufacture of tricresyl phosphate.
Brit. J. Indust. Med.; 1:227;1944

Frontali N ; Guarcini AM ; Spagnolo A ; Amantini MC
Chemical agents used in shoe factories causing polyneuropathies (triaryl phosphates, aliphatic hydrocarbons C5-C7)
Ann. Ist. Super. Sanita; VOL 15, ISS 2, 1979,273-323

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** NCI No. C61198
NTP No. 10305-V

**PROJECT TITLE:**
Tests for Toxicologic and Carcinogenic Effects. Status of Tungsten Carbide

**INVESTIGATOR(S):**
For further information, contact
Technical Information Section

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
Name and Address.
Including Zip Code.

**PERIOD FOR THIS NRP:**
Start Date:
End Date:
Annual Funding:

**PROJECT SUMMARY:**

In June 1980, the Executive Committee selected 39 priority chemicals to be tested by NTP for toxicologic and carcinogenic effects. The present status of these chemicals is being reported.

Twenty-three of the chemicals, scheduled to be on test or contracted for testing by the end of FY 81, will be committed through the subchronic phase only. This represents a departure from former practices. Currently, the prechronic phase has been expanded to include general toxicity, chemical disposition, and genetic toxicity (in vivo microbial, in vivo mammalian, unscheduled DNA synthesis, and transformation) studies. Data for the toxicological profile of the chemical will be used to formulate decisions for continuing the two year chronic bioassay or initiating other tests appropriate to the specific toxicologic and carcinogenic endpoints. Additional information on subchronic studies of any of these chemicals can be obtained from the Technical Information Section, NTP.

Studies of tungsten carbide are in the experimental design stage. Testing through the subchronic phase is expected.

<ins>CAS Registry No.</ins>
Tungsten carbide [WC] 12070-12-1

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Blanc M ; Barral-Chamaillard C
[Pneumoconiosis by exposure to tungsten carbide (letter)]
Nouv Presse Med; VOL 7, ISS 30, 1978, P2656-7

Bartl F ; Lichtenstein ME
Tungsten carbide pulmonary fibrosis--a case report.
Am Ind Hyg Assoc J; VOL 37, ISS 11, 1976, P668-70

Kaburaki K
On the hard metal disease
Kozan Igaku Kenkyukai Kaishi; VOL 19,, 1979,42-4

COATES E O JR ; REBUCK JW ; KVALE PA
ABNORMAL LEUKOCYTE RESPONSE IN SKIN WINDOWS OF PATIENTS WITH DIFFUSE INTERSTITIAL PNEUMONITIS
AM REV RESPIR DIS; 103 (6). 1971 895

Einbrodt HJ
Limit Values for Dust-Like Air Pollutants and Other Counter-Measures (Grenzwerte fuer staubfoermige Luftverschmutzungsstoffe und andere Bekaempfungsmassnahmen)
Abteilung fuer Hygiene und Arbeitsmedizin, 4 p.; 1971

Coates EO Jr ; Watson JH
Pathology of the lung in tungsten carbide workers using light and electron microscopy.
J Occup Med; VOL 15, ISS 3, 1973, P280-6

Coates EO Jr ; Watson JH
Diffuse interstitial lung disease in tungsten carbide workers.
Ann Intern Med; VOL 75, ISS 5, 1971, P709-16

McDermott FT
Dust in the cemented carbide industry.
Am Ind Hyg Assoc J; VOL 32, ISS 3, 1971, P188-93

Dorsit G ; Girard R ; Rousset H ; Brune J ; Wiesendanger T
Tolot F ; Bourret J ; Galy P
[Pulmonary fibrosis in 3 workers in the same factory exposed to cobalt and tungsten carbide dust. Pulmonary disorders in the hard metal industry. Apropos of an occupational survey]
Sem Hop Paris; VOL 46, ISS 51, 1970, P3363-76

Shirasaki T
[Pneumoconiosis and tungsten carbide tool industry]
Naika; VOL 24, ISS 2, 1969, P377-82

Bruckner HC
Extrinsic asthma in a tungsten carbide worker.
J Occup Med; VOL 9, ISS 10, 1967, P518-9

# INDEX OF COMPOUNDS

Propantheline bromide
  Mouse - feed - short-term - carcinogenicity...74:11
  Rat - feed - short-term - carcinogenicity...74:11
Riddelline
  Mouse - gavage - short-term - carcinogenicity...74:15
  Rat - gavage - short-term - carcinogenicity...74:15
Seneciphylline...74:13
Tetrahydrofuran
  Mouse - gavage - carcinogenicity...74:17
  Rat - gavage - carcinogenicity...74:17
Triamterene
  Mouse - feed - carcinogenicity...74:19
  Rat - feed - carcinogenicity...74:19
1,2,3-Trichloropropane
  Mouse - gavage - carcinogenicity...74:21
  Rat - gavage - carcinogenicity...74:21
Tricresyl phosphate
  Mouse - gavage - carcinogenicity...74:23
  Rat - gavage - carcinogenicity...74:23
Tungsten carbide [WC]
  Short-term - carcinogenicity...74:25

# Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-34-0 Propantheline bromide...74:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
60-87-7 Promethazine...73:31
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9, 72:27
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-38-7 Vinylidene fluoride...68:35
75-44-5 Phosgene...73:29
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-06-1 Acrylamide...55:21, 55:23
79-11-8 Chloroacetic acid...57:19
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21

| | |
|---|---|
| 87-62-7 | 2,6-Xylidine...56:29, 59:13 |
| 87-86-5 | Pentachlorophenol...66:5 |
| 89-63-4 | 4-Chloro-2-nitroaniline...70:27 |
| 91-20-3 | Naphthalene...69:7 |
| 91-23-6 | o-Nitroanisole...73:25 |
| 91-64-5 | Coumarin...57:27 |
| 91-79-2 | Thenyldiamine (Pharmaceutical)...64:9 |
| 91-80-5 | Methapyrilene...64:15 |
| 91-81-6 | Tripelenamine...64:7 |
| 91-84-9 | Pyrilamine...64:11 |
| 92-48-8 | 6-Methylcoumarin...57:23 |
| 93-76-5 | 2,4,5-T...66:5 |
| 94-66-2 | Diethyl phthalate...57:31 |
| 94-75-7 | 2,4-D...66:5 |
| 95-50-1 | 1,2-Dichlorobenzene...55:31 |
| 95-86-3 | 2,4-Diaminophenol...64:25 |
| 95-95-4 | 2,4,5-Trichlorophenol...68:33 |
| 96-09-3 | Styrene oxide...65:17 |
| 96-18-4 | 1,2,3-Trichloropropane...74:21 |
| 98-85-1 | alpha-Methylbenzyl alcohol...61:23 |
| 98-95-3 | Nitrobenzene...71:29 |
| 100-01-6 | p-Nitroaniline...73:23 |
| 100-02-7 | p-Nitrophenol...65:13 |
| 100-40-3 | 4-Vinylcyclohexene...57:9 |
| 100-41-4 | Ethylbenzene...69:21 |
| 100-42-5 | Styrene...55:27 |
| 100-44-7 | Benzyl chloride...65:5 |
| 101-90-6 | Diglycidyl resorcinol ether...63:9 |
| 101-77-9 | 4,4'-Methylenedianiline...63:13 |
| 103-90-2 | 4-Hydroxyacetanilide...57:25 |
| 104-55-2 | Cinnamaldehyde...64:27 |
| 106-46-7 | 1,4-Dichlorobenzene...55:33 |
| 106-47-8 | p-Chloroaniline...60:21 |
| 106-87-6 | 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25 |
| 107-02-8 | Acrolein...59:23 |
| 107-07-3 | Ethylene chlorohydrin...58:19 |
| 107-15-3 | Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17 |
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9 |
| 109-99-9 | Tetrahydrofuran...74:17 |
| 110-54-3 | Hexane...55:21, 69:23, 71:33 |
| 110-80-5 | 2-Ethoxyethanol...65:3, 66:9 |
| 111-15-9 | 2-Ethoxyethanol acetate...65:3 |
| 111-30-8 | Glutaraldehyde...57:15 |
| 111-76-2 | 2-Butoxyethanol...65:3, 66:9 |
| 111-90-0 | 2-(2-Ethoxyethoxy)ethanol...65:3 |
| 113-45-1 | Methylphenidate...72:33 |
| 115-07-1 | Propylene...58:23 |
| 115-09-3 | Methylmercuric chloride...55:23 |

| | |
|---|---|
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27 |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 |
| | (petroleum)...66:13, 66:15 |
| 120-32-1 | o-Benzyl-p-chlorophenol...72:13 |
| 120-40-1 | Lauric acid dietholamine (con 1/1); (Bis(2-hydroxyethyl)lauramide)...61:21 |
| 121-19-7 | Roxarsone...59:19 |
| 121-79-9 | Propyl gallate...63:17 |
| 123-72-8 | Butyraldehyde...72:11 |
| 124-40-3 | Dimethylamine...71:27 |
| 124-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 148-65-2 | Chlorothen...72:25 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23, 69:5 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 396-01-0 | Triamterene...74:19 |
| 480-81-9 | Seneciphylline...74:13 |
| 482-89-3 | C.I. Vat Blue 1...69:17 |
| 469-21-6 | Doxylamine...64:23 |
| 470-82-6 | 1,8-Cineole...64:29 |
| 509-14-8 | Tetranitromethane...55:15, 56:27 |
| 518-47-8 | C.I. Acid Yellow 73...58:11 |
| 542-56-3 | Isobutyl nitrite...64:17 |
| 542-75-6 | 1,3-Dichloropropene...63:7 |
| 542-78-9 | Malonaldehyde...58:17 |
| 555-30-6 | Methyldopa...67:29 |
| 569-61-9 | C.I. Basic Red 9, monohydrochloride...58:13 |
| 583-39-1 | 2-Mercaptobenzimidazole...69:27 |
| 584-84-9 | 2,4-Toluene diisocyanate...59:7 |
| 598-55-0 | Methyl carbonate...67:27 |
| 673-06-3 | D-phenylalanine...70:9 |
| 828-00-2 | Dimethoxane...61:11 |
| 868-85-9 | Dimethyl hydrogen phosphite...59:3 |
| 924-42-5 | N-Methylolacrylamide...57:21 |
| 989-38-8 | Rhodamine 6G...58:9 |
| 1271-19-8 | Titanocene dichloride...60:31 |
| 1306-19-0 | Cadmium oxide...68:21 |
| 1306-23-6 | Cadmium sulfide...68:23 |
| 1309-37-1 | Ferric oxide...62:5 |
| 1313-27-5 | Molybdenum trioxide...70:7 |
| 1314-13-2 | Zinc oxide...70:21 |
| 1314-62-1 | Vanadium pentoxide...70:19 |
| 1317-71-1 | Olivine...62:7 |
| 1325-37-7 | C.I. Direct Yellow 11...69:15 |
| 1330-20-7 | Xylene...62:11, 67:11 |
| 1330-78-5 | Tricresyl phosphate...74:23 |
| 1338-23-4 | 2-Butanone, peroxide...62:15 |

1344-00-9 Sodium aluminosilicate...56:15
1406-18-4 Vitamin E...70:17
1817-73-8 2-Bromo-4,6-dinitroaniline...69:9
1854-26-8 Dimethyloldihydroxyethyleneurea...60:19
1972-08-3 l-trans-delta(9)-Tetrahydrocannabinol...70:15
1982-37-2 Methdilazine...72:31
2058-46-0 Oxytetracycline hydrochloride...57:13
2385-85-5 Mirex...63:15
2425-85-6 C.I. Pigment Red 3...61:15
2429-73-4 C. I. Direct Blue 2...72:17
2429-74-5 C. I. Direct Blue 15...68:27
2429-74-5 C. I. Direct Blue 15...68:25
2475-45-8 C. I. Disperse Blue 1...65:25
2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5
5989-27-5 d-Limonene...60:27
6358-31-2 C. I. Pigment Yellow 74...72:21
6459-94-5 C. I. Acid Red 114...72:15
6471-49-4 C.I. Pigment Red 23...61:13
7166-19-0 beta-Bromo-beta-nitrostyrene...69:11
7440-41-7 Beryllium...66:11
7487-94-7 Mercuric chloride...59:31
7631-86-9 Silica...62:7, 71:43
7681-49-4 Sodium fluoride...56:19
7782-50-5 Chlorine...64:3, 71:41
7783-06-4 Hydrogen sulfide...71:37
7783-81-5 Uranium-238 hexafluoride...55:9
7785-87-7 Manganese sulfate...72:29
9002-92-0 Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5
9003-39-8 1-Vinyl-2-pyrrolidinone polymers...68:29
9005-65-6 Polysorbate 80...60:15
1321-12-6 Nitrotoluene (undefined mixture)...73:27
10028-15-6 Ozone...59:25
10098-97-2 Strontium-90...56:9
10325-94-7 Cadmium nitrate...69:13
10361-37-2 Barium chloride...70:25
10599-90-3 Chloramine...72:23
12001-28-4 Crocidolite...63:27
12001-29-5 Chrosotile...63:25
12070-12-1 Tungsten carbide [WC]...74:25
12172-73-5 Amosite...63:23
12266-32-9 Plutonium-238 dioxide...61:7, 73:21
12741-11-6 Zirconium silicate...62:7
13552-44-8 4,4'-Methylenedianiline dihydrochloride...63:13
13961-86-9 Oleic acid dietholamine salt...65:15
13968-56-4 Plutonium-239 tetranitrate...61:7, 73:21

| | |
|---|---|
| 14047-09-7 | 3,3',4,4'-Tetrachloroazobenzene...58:3 |
| 14807-96-6 | Talc...70:13 |
| 14808-60-7 | Quartz...62:5 |
| 14567-73-8 | Tremolite...63:19 |
| 15117-96-1 | Uranium-235...55:9 |
| 16127-62-1 | Amosite...63:23 |
| 16561-29-8 | 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21 |
| 19086-72-7 | Olivine...62:7 |
| 21232-47-3 | 3,3',4,4'-Tetrachloroazoxybenzene...58:3 |
| 21645-51-2 | Hydrated alumina (Aluminum hydroxide)...62:5 |
| 22840-34-2 | Plutonium-239 dioxide...56:11, 61:7, 73:21 |
| 23246-96-0 | Riddelline...74:15 |
| 28407-37-6 | C. I. Direct Blue 218...72:19 |
| 26628-22-8 | Sodium azide...56:31 |
| 26677-58-7 | Plutonium-239 citrate...56:11 |
| 36355-01-8 | Hexabromobiphenyl...64:13 |
| 52551-67-4 | HC Yellow No. 4...64:5 |
| 53799-46-5 | Crocidolite...63:27 |
| 58425-86-8 | Aluminum silicate...62:7 |
| 61076-97-9 | Chrysotile...63:25 |
| 61105-31-5 | Crocidolite...63:27 |
| 64741-55-5 | Light catalytic cracked naphtha...67:3, 67:5 |
| 64741-56-6 | Vacuum residuum (petroleum)...67:21 |
| 64741-62-4 | Catalytic cracked clarified oil (petroleum)...67:23 |
| 64741-63-5 | Light catalytic reformed naphtha (petroleum)...66:25, 66:27 |
| 64741-87-3 | Sweetened naphtha (petroleum)...66:17, 66:19 |
| 64742-48-9 | Hydrotreated heavy naphtha (petroleum)...67:17, 67:19 |
| 64742-80-9 | Hydrodesulfurized middle distillate (petroleum)...66:13, 66:15 |
| 64742-81-0 | Hydrodesulfurized kerosene (petroleum)...66:21, 66:23 |
| 68334-30-5 | Petroleum products, diesel oil...61:9, 73:17 |
| 68512-90-3 | Diesel test fuel...73:17 |
| 68476-34-6 | Fuels, diesel, No. 2...61:9, 73:17 |

## Supporting and Performing Organizations

- American Petroleum Institute
  - *Coate, W....67:7
  - *Furst, A....67:25
  - *Jagannath,...67:13
  - *Schroeder, R.E....67:11
  - *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  - *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  - *Weaver, N.K....55:27
  - Sponsored studies...67:23
- Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5, 72:13, 74:23
- Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13
- Biodynamics...67:11
- Borriston Research Laboratories
  - Niemeier, R. W....62:7
- Brookhaven National Laboratory...71:43
  - Drew, R.T....59:23, 59:25, 64:3
  - Kutzman, R.S....59:23, 59:25, 64:3
- Bushy Run Research Center, Union Carbide
  - DePass, L. R....60:5, 60:7, 60:9, 60:11
  - Peterson, L.G....60:11
  - Woodside, M. D....60:5, 60:7
  - Yang, R.S.H...60:5, 60:7, 60:9, 60:11, 60:17
  - Zelenak, J.P....60:9
- Central Institute for Nutrition & Food...68:19
- Chemical Industry Institute of Toxicology
  - *Barrow, C. S....71:27, 71:41
  - *Bus, J.S....71:37, 71:39
  - *Drew, R. T....71:43
  - *Gralla, E....55:3, 55:5, 71:33, 71:35
  - Hamm, T....71:29, 71:31
  - *Kutzman, R. S....71:43
  - *Stack, C.R....55:27, 55:29, 55:31, 55:33
  - Sponsored studies...71:27, 71:29, 71:31
- Department of Energy...56:9, 56:11, 61:7, 61:9
- Dow Chemical USA
  - John, J.A....55:27, 55:29, 55:31, 55:33
  - Sponsored studies...60:7, 60:9, 60:11
- Elars Bioresearch Laboratories, Inc...67:9, 67:15
- Enviro Control, Inc.
  - Futagaki, S....60:3
  - Thomas, P....60:3
- Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15, 72:23, 72:29, 74:17
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23, 72:15
  Coate, W. B....55:25
Hazelton Raltec Inc....72:33, 73:23, 73:25, 74:15, 74:21
Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute 73:13, 73:15, 73:17, 73:19, 73:21
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9, 73:13, 73:15
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp....57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17, 72:19, 74:11, 74:19
  Ulrich, C....71:41
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13, 72:31, 73:31
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
Morgantown Energy Technology Center...73:13, 73:15,
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3

*Project Officer/Compound Manager

- National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19
  - *Brown, D....55:9
  - *Boeniger, M....55:11
  - *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  - *Cox, C....60:3
  - *Donaldson, H....66:3
  - *Elliott, L....56:3, 56:7
  - *Herrick, B....60:3
  - *Honchar, P....66:5
  - Lewis, T. R....62:5
  - Nelson, B.K....65:3
  - *Reeve, G....66:7
  - *Okun, A....66:11
  - *Robinson, C....55:7
  - *Rosenberg, M....66:9
  - Stern, F. B....62:3
  - *Taylor, P....55:13
  - Wagner, W. D....62:9
  - *Whalen, J....56:5
  - *Whitmire, C....55:15
  - Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
- National Institutes of Health
  - Sponsored studies...61:3
- National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21, 72:11, 72:17, 72:25, 72:27, 73:27, 73:29, 74:13, 74:21, 74:25
  - *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
  - *Birnbaum, L....59:9, 72:13
  - *Brown, S....69:7, 70:13
  - *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15, 73:23, 73:25
  - *Chu, K....69:9, 70:5
  - *Creasia, D....65:5, 65:17, 65:23
  - *Dean, J....60:17, 65:11
  - *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
  - *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
  - *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23, 74:11
  - *Eastin, W....69:5, 69:5, 69:15, 72:21
  - *Goldman, D....70:15, 72:31, 74:15
  - *Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29
  - *Gupta, B....59:5, 70:25, 74:17
  - *Hartwell, W....58:5, 59:19, 59:21, 60:21
  - *Huff, J....63:15, 64:33
  - *Irwin, R....59:29, 64:25, 65:13, 69:19, 74:23

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

*Jackson, C....64:17
*Jameson, C. W....55:17, 60:27, 63:3
*Kluwe, W. M....57:5, 65:9, 72:33
*Lamb, J. C....57:29, 63:13
*Luster, M....73:31
*Matthews, H....59:11, 59:27, 65:21
*McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
*McCoy, J.L....60:19, 69:25, 70:23, 70:27
*Melnick, R....56:21, 59:17, 63:11
*Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17, 72:15, 72:19
*Moorman, W....70:21
*Niemeier, R....70:19
*Padarathsingh, M....62:19
*Plotnick, H....69:21
*Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
*Quest, J....67:27, 69:27, 70:7
*Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
*Van Stee, E....60:13
*Walters, D....72:29
*Ward, J.M....58:17, 58:19, 58:21, 61:11
*Weber, H....69:11
*Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11, 72:23, 74:19
Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
Cavender, F....55:3, 55:5, 71:33, 71:35
Morgan, J. M....71:37, 71:39
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29, 72:23

*Project Officer/Compound Manager

Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

# TOXICOLOGY INFORMATION RESPONSE CENTER
# (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

PB82-220922

# Proceedings
## of the Symposium on Information Transfer in Toxicology

**PUBLICATION NOTICE**

Copies now available by mail from:

National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, Virginia 22161

To order, complete and mail the order form on the reverse side.

September 16-17, 1981

Lister Hill Center Auditorium
National Library of Medicine
Bethesda, Maryland

# ORDER FORM

Please send ____________ copy (copies) of NTIS Order Number PB82-220922 at U.S. $12.00 for each copy to:

Name ____________________________________________

Organization ______________________________________

Address __________________________________________

_________________________________________________

City ____________________ State ________________ Zip __________

Telephone: (        ) _______________________________________

METHOD OF PAYMENT:

☐ Charge my NTIS deposit account no. ______________________

☐ Purchase order no. ____________________________________

☐ Check enclosed for $ ___________________________________

☐ Charge to my ☐ American Express ☐ Visa ☐ Master Card

Account no. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Card expiration date ______________________________________

Signature _______________________________________________
(Required to validate order)

MAIL ORDER TO:

National Technical Information Service (NTIS)
U.S. DEPARTMENT OF COMMERCE
5285 Port Royal Road
Springfield, Va. 22161

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

**Supporting Organization**

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

**Project Title**

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

**Investigator(s)**

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

**Performing Organization**

Enter name of organization where work is actually being done.

**Start Date, End Date and Annual Funding**

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

**Project Summary**

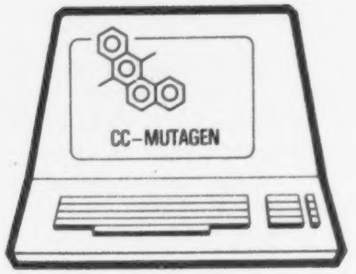
Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

**Send All Notices of Research Projects Directly To:**

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

*U.S. GOVERNMENT PRINTING OFFICE: 1982 361-756/508 1-3



NATIONAL LIBRARY OF MEDICINE
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# RTECS
## REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES
# CONDENSED

---

Bethesda, Maryland 20209

---

**RTECS DEFINED**

RTECS (Registry of Toxic Effects of Chemical Substances) is in the National Library of Medicine's online version of the National Institute for Occupational Safety and Health's (NIOSH) annual compilation of substances with toxic action. The original collection of data that makes up RTECS was known as the Toxic Substances List, compiled in 1971 by NIOSH in response to the Occupational Safety and Health Act of 1970. The hard copy version of RTECS is updated annually with quarterly microfiche editions available. NIOSH is responsible for the file content in RTECS, and for providing quarterly updates to NLM. RTECS currently contains toxicity data for more than 50,000 substances (1/82).

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability.

**RTECS ACCESSED**

RTECS is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

**RTECS SEARCHED**

The user can search RTECS for a particular chemical record by entering the Secondary Source ID, CAS Type 1 Name, Synonyms, or CAS Registry Number. The user can also search RTECS for information on a group of compounds or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected effects reported for a given substance. Online RTECS gives the user the flexibility of interactive searching and retrieval which allows focusing on subsets of data and tailoring of prints according to user needs.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability

**RTECS ACCESSED**

RTECS is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

**RTECS SEARCHED**

The user can search RTECS for a particular chemical record by entering the Secondary Source ID, CAS Type 1 Name, Synonyms, or CAS Registry Number. The user can also search RTECS for information on a group of compounds or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected effects reported for a given substance. Online RTECS gives the user the flexibility of interactive searching and retrieval which allows focusing on subsets of data and tailoring of prints according to user needs. A simulated RTECS record, in the format it appears in the online file follows:

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

75

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

NEWARK PUBLIC LIBRARY
DEC 20 1982
U. S. GOVT. PUBS.
DEPOSITORY 376

PB82-915008
NUMBER 75
AUGUST 1982

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## TABLE OF CONTENTS

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
13 Carcinogenesis Bioassay of Trimellitic Anhydride
15 *In vitro* Studies on 1,2,4-Trichlorobenzene
17 *In vitro* Studies on o-Dichlorobenzene
19 *In vitro* Studies on Monochlorobenzene
21 Carcinogenesis Bioassay of Gentian Violet
23 INDEX OF COMPOUNDS
24 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
29 SUPPORTING AND PERFORMING ORGANIZATIONS
34 TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)
35 SYMPOSIUM ON INFORMATION TRANSFER IN TOXICOLOGY
37 NOTICE OF RESEARCH PROJECT BLANK FORM
39 TOXLINE CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20.3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:

| | |
|---|---|
| North American Continent addresses | $40 |
| All others | $80 |

Bulk rates available on request from NTIS

## FROM THE EDITOR

The National Toxicology Program's Fiscal Year 1982 report has been released. It is available upon request in two volumes from:

National Toxicology Program
Public Information Office
P.O. Box 12233
Research Triangle Park, NC 27709
(919-541-3991; FTS 629-3991)

The ANNUAL PLAN (Publication No. NTP-81-94 March 1982) reports "Accomplishments of NTP programs during FY 1981 and program plans for 1982...." The second volume is the Review of Current DHHS, DOE, and EPA Research Related to Toxicology for Fiscal Year 1982. This publication (No. NTP-82-040, June 1982) "...covers projections for Fiscal Year 1982 made prior to January 1, 1982. It represents responses by agencies of DHHS, DOE, and EPA to requests by the Director, NTP, for information on agency programs in basic toxicology research, toxicology testing, and toxicology method development." The bulk of this volume is in tabular form and it summarizes the individual projects.

Carol B. Haberman
EDITOR, TOX-TIPS

### WORLD HEALTH ORGANIZATION

# FELLOWSHIPS FOR RESEARCH TRAINING IN CANCER

## 1983 - 1984

## International Agency for Research on Cancer

## Lyon - France

**Applications for training fellowships in 1983-1984 are invited from junior scientists wishing to be trained in those aspects of cancer research related to the Agency's own programme: epidemiology, biostatistics and environmental carcinogenesis - both chemical and viral. Only applications in these fields can be entertained.**

Applicants should be engaged in research in medical or allied sciences and intend to pursue a career in cancer research.

Fellowships are awarded for one year and are tenable at the Agency or in another suitable institution abroad. Fellows will, in general, be selected from applicants with some post-doctoral research experience related to cancer in medicine or the natural sciences. They must have an adequate knowledge, both written and spoken, of the language of the country in which their fellowship is tenable.

Applications cannot normally be accepted from people already holding fellowships enabling them to study abroad.

Stipends will vary according to the cost of living in the country of study. The cost of travel for the applicant and, in certain circumstances, that of one dependent will be met.

Fellowship application forms and more detailed information are available from:

The Head of the Research Training and Liaison Programme

INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

150 cours Albert-Thomas
69372 LYON CEDEX 08
France

Applications must reach the Agency not later than
31 January 1983

**THE TRAVEL FELLOWSHIPS PROGRAMME HAS BEEN SUSPENDED**

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

The following group of references were gathered together to update those listed in TOX-TIPS for February, 1982.

## STUDYING TOXIC RESPONSES IN FETAL AND YOUNG ANIMALS.

**Aroux, M. Behavioral teratogenesis. A new aspect of the pathology of prenatal development.** *J Gynecol. Obstet Biol Reprod (Paris) 10,* **633-40, 1981.**

> **Functional disorders, especially of the nervous system, can exist in the absence of anatomical malformations. These are considered to be due to "...diverse maternal and even paternal assaults on the developing conceptus." These disorders of intellectual, behavioral, and motor systems may be of toxic, dietary or iatrogenic origin. Moreover, they may affect the sexes differently. The author suggests a terminology for these aspects of teratogenesis and points out certain practical facets of experimental planning within the framework of this terminology, in addition to emphasizing factors "...which can affect the optimum quality of the offspring...".**

Storeng, R. and Jonsen, J. Embryo cultures in toxicological research. Meeting on chemical indices and mechanisms of organ directed toxicity, Barcelona, Spain, March 4-7, 1981, *Gen Pharmacol 12,* A33, 1981.

Clayton, R. M. and Zehir, A. The use of cell culture methods for exploring teratogenic susceptibility. *Dev Toxicol* 59-82, 1982.

> This review has approximately 130 references on the use of cell culture techniques in testing new drugs and chemicals for teratogenic effects in the human fetus.

Kochar, D. M. *In vitro* testing of teratogenic agents using mammalian embryos. *Teratogenesis Carcinog Mutagen 1,* 63-74, 1980.

> Efficient methods for the testing of new drugs for teratogenic effects are urgently needed. Also variables in the current use of pregnant dams have many variables all of which may affect the young but which are difficult to control adequately. In the author's opinion, organ cultures and whole embryo cultures offer many advantages, not the least of which is the opportunity to control conditions more precisely than can be done when whole animals are used. The author stresses the advantage of limb culture for screening purposes. Such a screening technique in his view not only provides information on teratogenicity but also on the mechanism of action of the drug.

Hardin, B. D. et al. Testing of selected workplace chemicals for teratogenic potential. *Scand. J. Work Environ Health 7 Suppl 4,* 66-75, 1981.

> Nineteen industrial chemicals were studied for their teratogenic potential. Evidence of such potential was found with allyl chloride and bisphenol A. Fetal toxicity in the absence of maternal toxicity was found for methyl styrene and 2-nitropropane. 2-ethoxyethanol was shown in inhalation studies to be strongly embryotoxic at higher exposure levels in the inhalation studies and was teratogenic at lower concentration.

Nau, H. et al. New model for embryotoxicity testing: teratogenicity and pharmacokinetics of valproic acid following constant-rate administration in the mouse using therapeutic drugs and metabolite concentrations. *Life Sci 29,* 2803-2814, 1981.

Giavini, E. et al. The preimplantation embryo as a target system for drugs and heavy metals. *Organ-Directed Toxic Chem Indices Mech Proc Symp:* 311-15, 1981

> Embryotoxic effects as judged by a decrease in blastocytes was produced by heavy metals studied in the following order Cu Pb Cd. On the basis of the same criteria actinomycin-D and daunomycin administered on day 1 or 2 to pregnant rats were embryolethal and embryotoxic and only embryotoxic on day 3. Chloroamphanicol administered on day 1 induced loss of blastocytes and hence potential embryolethality. Cyclophosphamide was markedly embryotoxic but thiamphenicol appeared to have no embryotoxicity under the conditions of these experiments.

Bass, R. and Neubert, D. Testing for embryotoxicity, in: further studies in the assessment of toxic actions. *Arch Toxicol Suppl 4,* 256-266, 1980.

Elo, H. Methods used in the study of teratogenic and embryotoxic properties of chemicals. *Acta Pharm Fenn 86*, 87-94, 1977.

> The critical points in embryonic development, planning teratogenicity tests, and interpretation of results as well as the arguments for and against the use of *in vitro* methods in contrast to *in vivo* and/or epidemiological methods were considered. Methods for testing mutagenicity were also discussed.

Fabro, S., Shull, G. and Brown, N. A. The relative teratogenic index and teratogenic potency: proposed components of developmental toxicity risk assessment. *Teratogenesis Carcinog Mutagen 2*, 61-76, 1982.

> "Teratogenicity tests should provide answers to three questions: (1) Can the agent induce developmental defects? ("teratogenic potential"); (2) What are the effective doses? ("teratogenic potency"); and (3) Are effective doses below adult toxic doses? ("teratogenic hazard"). The authors propose parameters to describe teratogenic hazard and teratogenic potency in quantitative terms. Details of the derivation and parameters are given for the CD-1 mouse using eight structurally related anhydrides.

Kline, J. et al. Epidemiological detection of low dose effects on the developing fetus. *Environ Health Perspect 42*, 119-26, 1981.

> Models developed for the study of carcinogens have been transferred to studies on reproduction. The authors emphasize the distinctive features of reproduction which must be considered before models developed for cancer studies can yield valid data. The discussion centers around the questions that arise in attempting to set safe levels of smoking and alcohol intake in order to avoid spontaneous abortion or birthweight so low as to put the newborn at risk.

McGarrity, C. et al. The effect of sodium salicylate on the rat embryo in culture: an *in vitro* model for the morphological assessment of teratogenicity. *J Anat 133*, 257-269, 1981.

> Gravid rats were injected at 9.5 days gestation and the fetuses examined at 11.5 days for resorption and abnormalities. Blood serum levels of salicylate were determined 3-3.5 and 18.5 hours after injection. These data established the harmful effects of salicylate under these circumstances. *In vitro* cultures of embryos were then exposed to salicylate either by addition of the drug to the culture medium or by including serum from salicylate injected females in the culture medium. There was a "...great similarity between the results obtained from animals cultured in serum with salicylate added and results from culture in serum of salicylate treated rats." The authors conclude that the drug acts "...directly on the feto-placental unit..." and is itself the teratogen.

---

## JOURNAL LITERATURE

Kramer, P. G. and Knaap, A. G. Mutagenicity tests in the toxicological evaluation of chemical agents: A report from the Public Health Council. *Ned Tijdschr Geneskd 27*, 392-3, 1982.

Horakova, K. Use of cultures in monitoring the toxic and mutagenic effects of chemical substances present in the environment. *Cesk Fysiol. 30*, 407-25, 1981.

> This review with more than 100 references deals with mutagenicity resulting from environmental toxicants and the use of cell culture techniques in monitoring such toxicants for mutagenicity.

**DeMarini, D. M., Plews, M. J. and Brockman, H. E. Use of four short-term tests to evaluate the mutagenicity of municipal water.** *J Toxicol Environ Health 9*, 127-40, 1982.

The four tests used measured reverse mutation (in a prokaryote), forward mutation (in mold), mitotic gene conversion (in yeast), and reverse mutation (in maise). Although it was not possible to "...rigorously compare..." the sensitivities of the four tests, certain conclusion could be drawn. "The results suggest that tests that detect a variety of genetic end-points should be used when testing complex mixtures such as drinking water." The authors discuss the advantages and disadvantages of such a battery of tests as applied to water.

Preston, R. J. et al. Mammalian *in vivo* and *in vitro* cytogenetic assays: a report of the U.S. EPA's gene-tox program. *Mutat Res 87*, 143-88, 1981.

This review, which includes 162 references, is an assessment of the clastogenic effects of chemicals both *in vivo* and *in vitro*. Much of the date available were not suitable for inclusion due to poor experimental design or unsatisfactory reporting of the data. The report concludes that for demonstration of *in vivo* effects, the simplest and most economical assay is the bone marrow assay. For *in vitro* studies, either leukocytes or cultured mammalian cell lines are suitable. There are, however, some advantages to the use of leukocytes, such as their ready availability. "In general, there was good agreement between clastogenicity and carcinogenicity."

Shiomi, T., Hieda-Shiomi, N. and Sato, K. A novel mutant of mouse lymphoma cells sensitive to alkylating agents and caffeine. *Mutat Res 103*, 61-9, 1982.

Two strains of lymphoma cells sensitive to methyl methanesulfonate have been isolated. One strain, M10, has previously been reported as sensitive to X-rays and now is shown to be sensitive to alkylating agents and to caffeine. The sensitivity of this strain to mutagens has been stable for one year. Cultures of the other strain, MS-1, have been stable for six months.

**Anonymous Chemical innovations: How big is toxic testing barrier? *Industrial Chemical News, Vol 3 No. 6,* 25-27, 1982.**

> **The effects of governmental regulations from several agencies upon the development and marketing of new chemicals as well as the problem for industry of attempting to meet testing standards is discussed from the point of view of industry.**

Davis, W. E. Health effects of chemicals: I. Carcinogenicity bioassay in laboratory animals. *Life Sciences Research Reports 12,* No. 1, April 1982.

> This excellent discussion of bioassay for carcinogenic effects of various chemicals covers the procedures used, and the interpretation of data.

Blazak, W. F., Sharma, R. K. and Krishna M. Health effects of chemicals: II. Short-term *in vitro* and *in vivo* cytogenetic procedures. *Life Sciences Research Report, 12,* No. 2, April 1982.

> These authors discuss and evaluate short-term cytogenetic procedures as a means of assessing the mutagenic poteitnal of environmental chemicals.

---

## GOVERNMENT REPORTS

Published by U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, March, 1982.

> A report of organic air pollutants that have been tested for carcinogenicity and mutagenicity. Report of a collaborative study between the National Cancer Institute and SRI International. This survey was supported by NCI contract NOI-CP-95607 with SRI International.

**The following reports are available from:**

**National Technical Information Service**

**5285 Port Royal Road**

**Springfield, Virginia 22161**

**(703) 487-4650**

Acute toxicity testing criteria for new chemical substances. EPA 560/13-79-009 (NTIS Order #: PB80-111 073)

Analytical protocols for making a preliminary assessment of halogenated organic compounds in man and environmental media. EPA 560/13-79-010 (NTIS Order #: PB80-162 168)

Cadmium and lead levels in human blood and kidney, literature search. EPA 560/13-80-002 (NTIS Order #: PB80-220 221)

Beck, S. L. Skeletal variants as an indicator of biological effects of environmental contaminants. EPA 600/S1-81-034 June 1981. (NTIS Order #: PB81-186 025)

Barth, M. L. and Richardson, R. J. Development of an *in vitro* neurotoxicity assay. EPA 600/S1-81-043 July 1981. (NTIS Order #: PB81-208 159)

---

---

## FEDERAL REGISTER

Availability of Draft Guidelines: Target Animal Safety for New Animal Drugs. Extension of Comment Period. *Federal Register 47*, No. 108, Friday, June 4, 1982, page 24439.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: NTP No. 10026-Y
and/or
Control No: NCI No. C56633

PROJECT TITLE:
Carcinogenesis Bioassay of Trimellitic Anhydride

INVESTIGATOR(S):
Contact:
Dr. Herbert Schumacher

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Center for Toxicological Research

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
National Center for Toxicological Research (NCTR)
National Toxicology Program
Jefferson, Arkansas 72079

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassay generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pre-testing, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Trimellitic anhydride is undergoing subchronic testing. The chemical is being administered to rats and mice via their food and by gavage.

CAS Registry No.
Trimellitic anhydride 552-30-7

TOX-TIPS AUGUST 1982 75-13

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

**The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.**

Wolkonsky P
The industrial physician and occupational lung disease.
J Allergy Clin Immunol; VOL 70, ISS 1, 1982, P67-9

Patterson R ; Zeiss CR ; Pruzansky JJ
Immunology and immunopathology of trimellitic anhydride pulmonary reactions.
J Allergy Clin Immunol; VOL 70, ISS 1, 1982, P19-23

Zeiss CR ; Wolkonsky P ; Pruzansky JJ ; Patterson R
Clinical and immunologic evaluation of trimellitic anhydride workers in multiple industrial settings.
J Allergy Clin Immunol; VOL 70, ISS 1, 1982, P15-8

Patterson R ; Pruzansky JJ ; Zeiss CR ; Greenberger PA ; Ts'ao C
Mintzer R ; Roxe D ; Phair J
CLINICAL & LABORATORY STUDIES RELATING TO LUNG DISEASE
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Patterson R ; Pruzansky JJ ; Zeiss CR ; Greenberger PA
ALLERGIC DISEASES CENTERS GRANT
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Liu FT ; Bargatze RF ; Katz DH
Induction of immunologic tolerance to the trimellitate haptenic group in mice: model for a therapeutic approach to trimellitic anhydride-induced hypersensitivity syndromes in humans?
J Allergy Clin Immunol; VOL 66, ISS 4, 1980, P322-6

From the NIH: Occupational asthma from a low-molecular-weight organic chemical.
JAMA; VOL 244, ISS 15, 1980, P1667-8

Check WA
Work-related asthma comes out of hiding [news]
JAMA; VOL 244, ISS 15, 1980, P1653-4, 1659

Patterson R ; Roberts M ; Harris KE ; Levitz D ; Zeiss CR
Pulmonary and systemic immune responses of rhesus monkeys to intrabronchial administration of trimellitic anhydride.
Clin Immunol Immunopathol; VOL 15, ISS 3, 1980, P357-66

Zeiss CR ; Levitz D ; Chacon R ; Wolkonsky P ; Patterson R
Pruzansky JJ
Quantitation and new antigenic determinant specificity of antibodies induced by inhalation of trimellitic anhydride in man.
Int Arch Allergy Appl Immunol; VOL 61, ISS 4, 1980, P380-8

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

Chemical Manufacturers Association
2501 M Street, NW
Washington, DC 20037

**SUPPORTING ORGANIZATION NUMBER(S):**

Contract No: CB 4.0-AHF
and/or
Control No:

**PROJECT TITLE:**

*In vitro* Studies on 1,2,4-Trichlorobenzene

| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
|---|---|
| Gary M. Williams, M.D. | Study Director, American Health Foundation |
| Carol R. Stack, Ph.D. | Program Administrator, CMA |

**PERFORMING ORGANIZATION:**

Name and Address Including Zip Code:
American Health Foundation
Naylor Dana Institute for Disease
Prevention
Valhalla, NY 10595

**PERIOD FOR THIS NRP:**

Start Date: May 1982
End Date: September 1982
Annual Funding:

**PROJECT SUMMARY:**

The purpose of the study is to evaluate 1,2,4-trichlorobenzene for its capacity to produce DNA repair or transformation in liver cell culture systems.

The hepatocyte primary culture/DNA repair assay developed by Williams uses isolated hepatocytes to detect DNA damage by measurement of DNA repair synthesis.

The assessment of neoplastic transformation by chemicals in adult rat liver epithelial cells (ARL) consists of assays for five markers of transformation: growth in soft agar, growth in low calcium medium, increase in cell density at confluency, presence of cytochemical activity of gamma-glutamyl transpeptidase, and increase in 2-deoxyglucose uptake.

CAS Registry No.
1,2,4-Trichlorobenzene 120-82-1

**The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.**

SMITH CC ; CRAGG ST ; WOLFE GF
SUBACUTE TOXICITY OF 1,2,4-TRICHLOROBENZENE IN SUBHUMAN PRIMATES
FED PROC,FED AM SOC EXP BIOL; 37:248,1978

ROBINSON KS ; KAVLOCK RJ ; GRAY LE ; CHERNOFF N
Multigeneration study of 1,2,4-trichlorobenzene in rats.
J TOXICOL ENVIRON HEALTH; 8 (3). 1981. 489-500.

Kociba RJ ; Leong BK ; Hemer RE Jr
Subchronic toxicity study of 1,2,4-trichlorobenzene in the rat, rabbit and beagle dog.
Drug Chem Toxicol; VOL 4, ISS 3, 1981, P229-49

Lingg RD ; Kaylor WH ; Pyle SM ; Kopfler FC ; Smith CC ; Wolfe GF
Cragg S
Comparative metabolism of 1,2,4-trichlorobenzene in the rat and rhesus monkey
Drug Metab. Dispos.; VOL 10, ISS 2, 1982,134-41

Johnson JS
Appendix I 1,2,4-TCB Information
Govt Reports Announcements & Index (GRA&I), Issue 16, 1982

Sasmore DP ; Palmer D
Ninety-Day Study of Inhaled 1,3,5-Trichlorobenzene in Rats.
Progress Report
Govt Reports Announcements & Index (GRA&I), Issue 16, 1982

SPEHAR RL ; LEMKE AE ; PICKERING QH ; ROUSH TH ; RUSSO RC
YOUNT JD
EFFECTS OF POLLUTION ON FRESH WATER FISH
J WATER POLLUT CONTROL FED; 53 (6). 1981. 1028-1076.

BUCCAFUSCO RJ ; ELLS SJ ; LEBLANC GA
ACUTE TOXICITY OF PRIORITY POLLUTANTS TO BLUEGILL
LEPOMIS-MACROCHIRUS
BULL ENVIRON CONTAM TOXICOL; 26 (4). 1981. 446-452.

Law FC P ; Addison RF
Response of trout hepatic mixed-function oxidases to experimental feeding of 9 known or possible chlorinated environmental contaminants
Bull. Environ. Contam. Toxicol.; VOL 27, ISS 5, 1981,605-9

Heitmuller PT ; Hollister TA ; Parrish PR
Acute toxicity of 54 industrial chemicals to sheepshead minnows (Cyprinodon variegatus)
Bull. Environ. Contam. Toxicol.; VOL 27, ISS 5, 1981,596-604

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
Chemical Manufacturers Association
2501 M Street, NW
Washington, DC 20037

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No:** CB 4.0-AHF
**and/or**
**Control No:**

**PROJECT TITLE:**
*In vitro* Studies on o-Dichlorobenzene

| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
|---|---|
| Gary M. Williams, M.D. | Study Director, American Health Foundation |
| Carol R. Stack, Ph.D. | Program Administrator, CMA |

**PERFORMING ORGANIZATION:**
**Name and Address, Including Zip Code.**
American Health Foundation
Naylor Dana Institute for Disease Prevention
Valhalla, NY 10595

**PERIOD FOR THIS NRP:**
**Start Date:** May 1982
**End Date:** September 1982
**Annual Funding:**

**PROJECT SUMMARY:**

The purpose of the study is to evaluate o-dichlorobenzene for its capacity to produce DNA repair or transformation in liver cell culture systems.

The hepatocyte primary culture/DNA repair assay developed by Williams uses isolated hepatocytes to detect DNA damage by measurement of DNA repair synthesis.

The assessment of neoplastic transformation by chemicals in adult rat liver epithelial cells (ARL) consists of assays for five markers of transformation: growth in soft agar, growth in low calcium medium, increase in cell density at confluency, presence of cytochemical activity of gamma-glutamyl transpeptidase, and increase in 2-deoxyglucose uptake.

CAS Registry No.
o-Dichlorobenzene 95-50-1

**The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.**

Orme T
CARCINOGENESIS BIOASSAY OF ORTHO-DICHLOROBENZENE
Toxicology Research Projects Directory, Vol.05 iss.11 1980

Yang KH ; Peterson RE ; Fujimoto JM
Increased bile duct-pancreatic fluid flow in benzene and halogenated benzene-treated rats.
Toxicol. Appl. Pharmacol. 47(3): 505-514 1979 (29 References)

Anonymous
Chlorinated benzenes.
In: Hazardous and Toxic Effects of Industrial Chemicals. Sittig, M., ed. (Noyes Data Corp.: NJ): pp. 111-113 1979 (6 References)

John JA ; Stack CR
ORTHODICHLOROBENZENE INHALATION TERATOLOGY STUDY IN FISCHER 344 RATS AND NEW ZEALAND WHITE RABBITS
Toxicology Research Projects Directory, Vol.06 iss.05 1981

KAVLOCK R ; CHERNOFF N ; CARVER B ; KOPFLER F
TERATOLOGY STUDIES IN MICE EXPOSED TO MUNICIPAL DRINKING-WATER CONCENTRATES DURING ORGANOGENESIS
FOOD COSMET TOXICOL; 17:343-347,1979

LAWLOR T ; HAWORTH SR ; VOYTEK P
EVALUATION OF THE GENETIC ACTIVITY OF NINE CHLORINATED PHENOLS, SEVEN CHLORINATED BENZENES AND THREE CHLORINATED HEXANES
ENVIRON MUTAGENESIS; 1:143,1979

FISHBEIN L
POTENTIAL HALOGENATED INDUSTRIAL CARCINOGENIC AND MUTAGENIC CHEMICALS. 4.HALOGENATED ARYL DERIVATIVES
SCI TOTAL ENVIRON; 11:259-278,1979

WHO
Chemicals and industrial processes associated with cancer in humans.
IARC Monogr. Eval. Carcinog. Risk. Chem. (1): 71-71 1979 (25 References)

Anonymous
Dichlorobenzenes.
In: Priority Toxic Pollutants: Health Impacts and Allowable Limits. Sittig, M., ed. (Noyes Data Corp.: Park Ridge, NJ): pp. 177-182 1980 (13 References)

Ogata M ; Hasegawa T ; Mori T ; Meguro T
Effects of chlorinated monoaromatic hydrocarbons on mitochondrial oxidative phosphorylation in rats liver
Ind. Health; VOL 19, ISS 1, 1981,31-6

Curtis MW ; Ward CH
Aquatic toxicity of forty industrial chemicals: testing in support of hazardous substance spill prevention regulation
J. Hydrol. (Amsterdam); VOL 51, ISS 1-4, 1981,359-67

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
Chemical Manufacturers Association
2501 M Street, NW
Washington, DC 20037

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** CB 4.0-AHF

**PROJECT TITLE:**
*In vitro* Studies on Monochlorobenzene

| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
|---|---|
| Gary M. Williams, M.D. | Study Director, American Health Foundation |
| Carol R. Stack, Ph.D. | Program Administrator, CMA |

**PERFORMING ORGANIZATION:**
**Name and Address, Including Zip Code:**
American Health Foundation
Naylor Dana Institute for Disease Prevention
Valhalla, NY 10595

**PERIOD FOR THIS NRP:**
**Start Date:** May 1982
**End Date:** September 1982
**Annual Funding:**

**PROJECT SUMMARY:**

The purpose of the study is to evaluate monochlorobenzene for its capacity to produce DNA repair or transformation in liver cell culture systems.

The hepatocyte primary culture/DNA repair assay developed by Williams uses isolated hepatocytes to detect DNA damage by measurement of DNA repair synthesis.

The assessment of neoplastic transformation by chemicals in adult rat liver epithelial cells (ARL) consists of assays for five markers of transformation: growth in soft agar, growth in low calcium medium, increase in cell density at confluency, presence of cytochemical activity of gamma-glutamyl transpeptidase, and increase in 2-deoxyglucose uptake.

CAS Registry No.
Monochlorobenzene 108-90-7

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Torkelson TR
Toxicology update: monochlorobenzene. Comments
JAT, J. Appl. Toxicol.; VOL 1, ISS 5, 1981,iii

Ariyoshi T
Chemical structure and toxicology of halogenated compounds
Kagaku Kogyo; VOL 32, ISS 5, 1981,500-5

Orme T
CARCINOGENESIS BIOASSAY OF CHLOROBENZENE
Toxicology Research Projects Directory, Vol.05 iss.09 1980

LAWLOR T ; HAWORTH SR ; VOYTEK P
EVALUATION OF THE GENETIC ACTIVITY OF NINE CHLORINATED PHENOLS,
SEVEN CHLORINATED BENZENES AND THREE CHLORINATED HEXANES
ENVIRON MUTAGENESIS; 1:143,1979

John JA ; Stack CR
MONOCHLOROBENZENE INHALATION TERATOLOGY STUDY IN FISCHER 344 RATS
AND NEW ZEALAND WHITE RABBITS
Toxicology Research Projects Directory, Vol.06 iss.05 1981

Halperin B ; Crandall M ; Giever P
MEDICAL AND INDUSTRIAL HYGIENE STUDY OF CHLORINATED HYDROCARBONS
Toxicology Research Projects Directory, Vol.04 iss.10 1979
Epidemiology Research Projects Directory, 1979

Kosyan SA ; Melikyan LG
Some parallels between the effect of occupationally harmful
factors in a cable enameling plant on the workers and on animals
placed there in a natural experiment
Tr. Erevan. Med. In-ta; ISS 19/3, 1980,47-53

Timoshenko LV ; Volodchenko VA ; Danilov VI ; Ostrovskaya IS
Kleiner AI ; Sonkin IS ; Timchenko AN ; Rezenkina LD
Hygienic standards for benzanthrone in the air of a working zone
Gig. Tr. Prof. Zabol.; ISS 3, 1980,53

DALICH GM ; LARSON RE
THE EFFECTS OF MONO CHLORO BENZENE ON HEPATIC GLUTATHIONE AND
LIVER FUNCTION IN RAINBOW TROUT AND RATS
64TH ANNUAL MEETING OF THE FED. AM. SOC. EXP. BIOL., ANAHEIM,
CALIF., USA, APR. 13-18, 1980. FED PROC; 39 (3). 1980. ABSTRACT
1886.

Unknown
HISTOPATHOLOGIC STUDY OF TISSUES OF EXPERIMENTAL ANIMALS EXPOSED
TO PESTICIDES
Toxicology Research Projects Directory, Vol.06 iss.10 1981

Petrocelli S ; Carroll J
HEALTH AND ENVIRONMENTAL EFFECTS OF SELECTED TOXIC WATER
POLLUTANTS (BENZENE AND CHLOROBENZENE)
Toxicology Research Projects Directory, Vol.05 iss.08 1980

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10008-R
NCI No. C55969

PROJECT TITLE:

Carcinogenesis Bioassay of Gentian Violet

INVESTIGATOR(S):

Contact:
Dr. Herbert Schumacher

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Center for Toxicological Research

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code:
National Center for Toxicological Research (NCTR)
National Toxicology Program
Jefferson, Arkansas 72079

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

This chemical has been administered to rats and mice via their feed. Testing is in the multi-generation chronic phase for rats. The chronic mice studies are in histopathology.

CAS Registry No.
Gentian violet 548-62-9

TOX-TIPS AUGUST 1982 75-21

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

SUGIMURA T ; SATO S ; NAGAO M ; YAMAGI T ; MATSUSHIMA T ; SEINO Y
TAKEUCHI M ; KAWACHI T
OVERLAPPING OF CARCINOGENS AND MUTAGENS
FUNDAM CANCER PREV,6TH SYMP PRINCESS TAKAMATSU CANCER RES
FUND(1975); 191-215,1976

Douglas F
CARCINOGENESIS TESTING OF HEXAMETHYL-P-ROSANILINE CHLORIDE
Toxicology Research Projects Directory, Vol.06 iss.05 1981

OLENTINE C G JR ; CROSS DL ; BURROWS PM
Carbon-14 labeled gentian violet residues in tissues of broiler
breeders.
POULT SCI; 59 (3). 1980. 500-505.

STEWART RG ; WYATT RD ; LANZA GM ; EDWARDS HM ; RUFF MD
Physiological effects of gentian violet on broiler chickens.
POULT SCI; 59 (2). 1980. 234-239.

Anthelmintic drug products for over-the-counter human use;
establishment of a monograph
Fed. Regist.; VOL 45, ISS 176, 1980,59540-8

AU W ; PATHAK S ; COLLIE CJ ; HSU TS
CYTOGENETIC TOXICITY OF GENTIAN VIOLET AND CRYSTAL VIOLET ON
MAMMALIAN CELLS IN VITRO
MUTAT RES; 58:269-276,1978

FUJITA H ; MIZUO A ; HIRAGA K
MUTAGENICITY OF DYES IN THE MICROBIAL SYSTEM
TOKYO TORITSU EISEI KENKYUSHO KENKYU NEMPO(ANNU REP TOKYO
METROPOL RES LAB PUBL HEALTH); 27-2:153-158,1976

MCCARROLL NE ; PIPER CE ; KEECH BH
AN E.COLI MICROSUSPENSION ASSAY FOR THE DETECTION OF DNA DAMAGE
INDUCED BY DIRECT-ACTING AGENTS AND PROMUTAGENS
ENVIRON MUTAGENESIS; 3:429-444,1981

ZEIGER E ; PAGANO DA ; ROBERTSON IGC
RAPID AND SIMPLE SCHEME FOR CONFIRMATION OF SALMONELLA TESTER
STRAIN PHENOTYPE
ENVIRON MUTAGENESIS; 3:205-209,1981

BONIN AM ; FARQUHARSON JB ; BAKER RSU
MUTAGENICITY OF ARYLMETHANE DYES IN SALMONELLA
MUTAT RES; 89:21-34,1981

## INDEX OF COMPOUNDS

o-Dichlorobenzene
  Adult rat liver cells - carcinogenicity...75:17
Gentian violet
  Mouse - feed - long-term - carcinogenicity...75:21
  Rat - feed - long-term - carcinogenicity...75:21
Monochlorobenzene
  Adult rat liver cells - carcinogenicity...75:19
1,2,4-Trichlorobenzene
  Adult rat liver cells - carcinogenicity...75:15
Trimellitic anhydride
  Mouse - feed - short-term - carcinogenicity...75:13
  Rat - feed - short-term - carcinogenicity...75:13
Trimellitic anhydride
  Mouse - feed - gavage - carcinogenicity...75:13
  Rat - feed - gavage - carcinogenicity...75:13

## Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-34-0 Propantheline bromide...74:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathinn (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
60-87-7 Promethazine...73:31
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9, 72:27
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-38-7 Vinylidene fluoride...68:35
75-44-5 Phosgene...73:29
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-06-1 Acrylamide...55:21, 55:23
79-11-8 Chloroacetic acid...57:19
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21

87-62-7 2,6-Xylidine...56:29, 59:13
87-86-5 Pentachlorophenol...66:5
89-63-4 4-Chloro-2-nitroaniline...70:27
91-20-3 Naphthalene...69:7
91-23-6 o-Nitroanisole...73:25
91-64-5 Coumarin...57:27
91-79-2 Thenyldiamine (Pharmaceutical)...64:9
91-80-5 Methapyrilene...64:15
91-81-6 Tripelenamine...64:7
91-84-9 Pyrilamine...64:11
92-48-8 6-Methylcoumarin...57:23
93-76-5 2,4,5-T...66:5
94-66-2 Diethyl phthalate...57:31
94-75-7 2,4-D...66:5
95-50-1 1,2-Dichlorobenzene...55:31, 75:17
95-86-3 2,4-Diaminophenol...64:25
95-95-4 2,4,5-Trichlorophenol...68:33
96-09-3 Styrene oxide...65:17
96-18-4 1,2,3-Trichloropropane...74:21
98-85-1 alpha-Methylbenzyl alcohol...61:23
98-95-3 Nitrobenzene...71:29
100-01-6 p-Nitroaniline...73:23
100-02-7 p-Nitrophenol...65:13
100-40-3 4-Vinylcyclohexene...57:9
100-41-4 Ethylbenzene...69:21
100-42-5 Styrene...55:27
100-44-7 Benzyl chloride...65:5
101-90-6 Diglycidyl resorcinol ether...63:9
101-77-9 4,4'-Methylenedianiline...63:13
103-90-2 4-Hydroxyacetanilide...57:25
104-55-2 Cinnamaldehyde...64:27
106-46-7 1,4-Dichlorobenzene...55:33
106-47-8 p-Chloroaniline...60:21
106-87-6 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25
107-02-8 Acrolein...59:23
107-07-3 Ethylene chlorohydrin...58:19
107-15-3 Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17
107-21-1 Ethylene glycol...64:21
108-30-5 Succinic anhydride...56:21, 59:17
108-46-3 Resorcinol...59:29
108-78-1 Melamine...63:11
108-88-3 Toluene...55:21, 57:3, 62:3, 62:11
108-90-7 Chlorobenzene...55:29, 75:19
108-94-1 Cyclohexanone...65:23
109-86-4 2-Methoxyethanol...65:3, 66:9
109-99-9 Tetrahydrofuran...74:17
110-54-3 Hexane...55:21, 69:23, 71:33
110-80-5 2-Ethoxyethanol...65:3, 66:9
111-15-9 2-Ethoxyethanol acetate...65:3
111-30-8 Glutaraldehyde...57:15
111-76-2 2-Butoxyethanol...65:3, 66:9
111-90-0 2-(2-Ethoxyethoxy)ethanol...65:3
113-45-1 Methylphenidate...72:33
115-07-1 Propylene...58:23
115-09-3 Methylmercuric chloride...55:23

| | |
|---|---|
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27 |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 |
| | (petroleum)...66:13, 66:15 |
| 120-32-1 | o-Benzyl-p-chlorophenol...72:13 |
| 120-40-1 | Lauric acid dietholamine (con 1/1);<br>(Bis(2-hydroxyethyl)lauramide)...61:21 |
| 120-82-1 | 1,2,4-Trichlorobenzene...75:15 |
| 121-19-7 | Roxarsone...59:19 |
| 121-79-9 | Propyl gallate...63:17 |
| 123-72-8 | Butyraldehyde...72:11 |
| 124-40-3 | Dimethylamine...71:27 |
| 124-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 148-65-2 | Chlorothen...72:25 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23, 69:5 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 396-01-0 | Triamterene...74:19 |
| 480-81-9 | Seneciphylline...74:13 |
| 482-89-3 | C.I. Vat Blue 1...69:17 |
| 469-21-6 | Doxylamine...64:23 |
| 470-82-6 | 1,8-Cineole...64:29 |
| 509-14-8 | Tetranitromethane...55:15, 56:27 |
| 518-47-8 | C.I. Acid Yellow 73...58:11 |
| 542-56-3 | Isobutyl nitrite...64:17 |
| 542-75-6 | 1,3-Dichloropropene...63:7 |
| 542-78-9 | Malonaldehyde...58:17 |
| 548-62-9 | Gentian violet...75:21 |
| 555-30-6 | Methyldopa...67:29 |
| 552-30-7 | Trimellitic anhydride...75:13 |
| 569-61-9 | C.I. Basic Red 9, monohydrochloride...58:13 |
| 583-39-1 | 2-Mercaptobenzimidazole...69:27 |
| 584-84-9 | 2,4-Toluene diisocyanate...59:7 |
| 598-55-0 | Methyl carbonate...67:27 |
| 673-06-3 | D-phenylalanine...70:9 |
| 828-00-2 | Dimethoxane...61:11 |
| 868-85-9 | Dimethyl hydrogen phosphite...59:3 |
| 924-42-5 | N-Methylolacrylamide...57:21 |
| 989-38-8 | Rhodamine 6G...58:9 |
| 1271-19-8 | Titanocene dichloride...60:31 |
| 1306-19-0 | Cadmium oxide...68:21 |
| 1306-23-6 | Cadmium sulfide...68:23 |
| 1309-37-1 | Ferric oxide...62:5 |
| 1313-27-5 | Molybdenum trioxide...70:7 |
| 1314-13-2 | Zinc oxide...70:21 |
| 1314-62-1 | Vanadium pentoxide...70:19 |
| 1317-71-1 | Olivine...62:7 |
| 1325-37-7 | C.I. Direct Yellow 11...69:15 |
| 1330-20-7 | Xylene...62:11, 67:11 |
| 1330-78-5 | Tricresyl phosphate...74:23 |
| 1338-23-4 | 2-Butanone, peroxide...62:15 |

1344-00-9 Sodium aluminosilicate...56:15
1406-18-4 Vitamin E...70:17
1817-73-8 2-Bromo-4,6-dinitroaniline...69:9
1854-26-8 Dimethyloldihydroxyethyleneurea...60:19
1972-08-3 -trans-delta(9)-Tetrahydrocannabinol...70:15
1982-37-2 Methdilazine...72:31
2058-46-0 Oxytetracycline hydrochloride...57:13
2385-85-5 Mirex...63:15
2425-85-6 C.I. Pigment Red 3...61:15
2429-73-4 C. I. Direct Blue 2...72:17
2429-74-5 C. I. Direct Blue 15...68:27
2429-74-5 C. I. Direct Blue 15...68:25
2475-45-8 C. I. Disperse Blue 1...65:25
2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5
5989-27-5 d-Limonene...60:27
6358-31-2 C. I. Pigment Yellow 74...72:21
6459-94-5 C. I. Acid Red 114...72:15
6471-49-4 C.I. Pigment Red 23...61:13
7166-19-0 beta-Bromo-beta-nitrostyrene...69:11
7440-41-7 Beryllium...66:11
7487-94-7 Mercuric chloride...59:31
7631-86-9 Silica...62:7, 71:43
7681-49-4 Sodium fluoride...56:19
7782-50-5 Chlorine...64:3, 71:41
7783-06-4 Hydrogen sulfide...71:37
7783-81-5 Uranium-238 hexafluoride...55:9
7785-87-7 Manganese sulfate...72:29
9002-92-0 Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5
9003-39-8 1-Vinyl-2-pyrrolidinone polymers...68:29
9005-65-6 Polysorbate 80...60:15
1321-12-6 Nitrotoluene (undefined mixture)...73:27
10028-15-6 Ozone...59:25
10098-97-2 Strontium-90...56:9
10325-94-7 Cadmium nitrate...69:13
10361-37-2 Barium chloride...70:25
10599-90-3 Chloramine...72:23
12001-28-4 Crocidolite...63:27
12001-29-5 Chrosotile...63:25
12070-12-1 Tungsten carbide [WC]...74:25
12172-73-5 Amosite...63:23
12266-32-9 Plutonium-238 dioxide...61:7, 73:21
12741-11-6 Zirconium silicate...62:7
13552-44-8 4,4'-Methylenedianiline dihydrochloride...63:13
13961-86-9 Oleic acid dietholamine salt...65:15
13968-56-4 Plutonium-239 tetranitrate...61:7, 73:21

14047-09-7 3,3',4,4'-Tetrachloroazobenzene...58:3
14807-96-6 Talc...70:13
14808-60-7 Quartz...62:5
14567-73-8 Tremolite...63:19
15117-96-1 Uranium-235...55:9
16127-62-1 Amosite...63:23
16561-29-8 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21
19086-72-7 Olivine...62:7
21232-47-3 3,3',4,4'-Tetrachloroazoxybenzene...58:3
21645-51-2 Hydrated alumina (Aluminum hydroxide)...62:5
22840-34-2 Plutonium-239 dioxide...56:11, 61:7, 73:21
23246-96-0 Riddelline...74:15
28407-37-6 C. I. Direct Blue 218...72:19
26628-22-8 Sodium azide...56:31
26677-58-7 Plutonium-239 citrate...56:11
36355-01-8 Hexabromobiphenyl...64:13
52551-67-4 HC Yellow No. 4...64:5
53799-46-5 Crocidolite...63:27
58425-86-8 Aluminum silicate...62:7
61076-97-9 Chrysotile...63:25
61105-31-5 Crocidolite...63:27
64741-55-5 Light catalytic cracked naphtha...67:3, 67:5
64741-56-6 Vacuum residuum (petroleum)...67:21
64741-62-4 Catalytic cracked clarified oil (petroleum)...67:23
64741-63-5 Light catalytic reformed naphtha (petroleum)...66:25, 66:27
64741-87-3 Sweetened naphtha (petroleum)...66:17, 66:19
64742-48-9 Hydrotreated heavy naphtha (petroleum)...67:17, 67:19
64742-80-9 Hydrodesulfurized middle distillate (petroleum)...66:13, 66:15
64742-81-0 Hydrodesulfurized kerosene (petroleum)...66:21, 66:23
68334-30-5 Petroleum products, diesel oil...61:9, 73:17
68512-90-3 Diesel test fuel...73:17
68476-34-6 Fuels, diesel, No. 2...61:9, 73:17

## Supporting and Performing Organizations

American Petroleum Institute
*Coate, W....67:7
*Furst, A....67:25
*Jagannath,...67:13
*Schroeder, R.E....67:11
*Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
*Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
*Weaver, N.K....55:27
Sponsored studies...67:23
American Health Foundation
Williams, G. M....75:15, 75:17, 75:19
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5, 72:13, 74:23
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13
Biodynamics...67:11
Borriston Research Laboratories
Niemeier, R. W....62:7
Brookhaven National Laboratory...71:43
Drew, R.T....59:23, 59:25, 64:3
Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
DePass, L. R....60:5, 60:7, 60:9, 60:11
Peterson, L.G....60:11
Woodside, M. D....60:5, 60:7
Yang, R.S.H...60:5, 60:7, 60:9, 60:11, 60:17
Zelenak, J.P....60:9
Central Institute for Nutrition & Food...68:19
Chemical Industry Institute of Toxicology
*Barrow, C. S....71:27, 71:41
*Bus, J.S....71:37, 71:39
*Drew, R. T....71:43
*Gralla, E....55:3, 55:5, 71:33, 71:35
Hamm, T....71:29, 71:31
*Kutzman, R. S....71:43
Sponsored studies...71:27, 71:29, 71:31
Chemical Manufacturers Association
*Stack, C.R....55:27, 55:29, 55:31, 55:33, 75:15, 75:17, 75:19
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
John, J.A....55:27, 55:29, 55:31, 55:33
Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
Futagaki, S....60:3
Thomas, P....60:3
Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15, 72:23, 72:29, 74:17
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23, 72:15
  Coate, W. B....55:25
Hazelton Raltec Inc....72:33, 73:23, 73:25, 74:15, 74:21
Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute 73:13, 73:15, 73:17, 73:19, 73:21
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9, 73:13, 73:15
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp....57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17, 72:19, 74:11, 74:19
  Ulrich, C....71:41
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13, 72:31, 73:31
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
Morgantown Energy Technology Center...73:13, 73:15,
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7. 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19, 75:13, 75:21
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3

*Project Officer/Compound Manager

National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19
 *Brown, D...55:9
 *Boeniger, M....55:11
 *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
 *Cox, C....60:3
 *Donaldson, H....66:3
 *Elliott, L....56:3, 56:7
 *Herrick, B....60:3
 *Honchar, P....66:5
  Lewis, T. R....62:5
  Nelson, B.K....65:3
 *Reeve, G....66:7
 *Okun, A....66:11
 *Robinson, C....55:7
 *Rosenberg, M....66:9
  Stern, F. B....62:3
 *Taylor, P....55:13
  Wagner, W. D....62:9
 *Whalen, J....56:5
 *Whitmire, C....55:15
  Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
National Institutes of Health
  Sponsored studies...61:3
National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21, 72:11, 72:17, 72:25, 72:27, 73:27, 73:29, 74:13, 74:21, 74:25, 75:13, 75:21
 *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
 *Birnbaum, L....59:9, 72:13
 *Brown, S....69:7, 70:13
 *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15, 73:23, 73:25
 *Chu, K....69:9, 70:5
 *Creasia, D....65:5, 65:17, 65:23
 *Dean, J....60:17, 65:11
 *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
 *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
 *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23, 74:11
 *Eastin, W....69:5, 69:5, 69:15, 72:21
 *Goldman, D....70:15, 72:31, 74:15
 *Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29
 *Gupta, B....59:5, 70:25, 74:17
 *Hartwell, W....58:5, 59:19, 59:21, 60:21
 *Huff, J....63:15, 64:33
 *Irwin, R....59:29, 64:25, 65:13, 69:19, 74:23

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

*Jackson, C....64:17
*Jameson, C. W....55:17, 60:27, 63:3
*Kluwe, W. M....57:5, 65:9, 72:33
*Lamb, J. C....57:29, 63:13
*Luster, M....73:31
*Matthews, H....59:11, 59:27, 65:21
*McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
*McCoy, J.L....60:19, 69:25, 70:23, 70:27
*Melnick, R....56:21, 59:17, 63:11
*Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17, 72:15, 72:19
*Moorman, W....70:21
*Niemeier, R....70:19
*Padarathsingh, M....62:19
*Plotnick, H....69:21
*Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
*Quest, J....67:27, 69:27, 70:7
*Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
*Van Stee, E....60:13
*Walters, D....72:29
*Ward, J.M....58:17, 58:19, 58:21, 61:11
*Weber, H....69:11
*Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11, 72:23, 74:19
Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
  Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5, 71:33, 71:35
  Morgan, J. M....71:37, 71:39
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29, 72:23

*Project Officer/Compound Manager

Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

# TOXICOLOGY INFORMATION RESPONSE CENTER (TIRC)

**Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.**

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

PB82-220922

# Proceedings

## of the Symposium on Information Transfer in Toxicology

**PUBLICATION NOTICE**

Copies now available by mail from:

National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, Virginia 22161

To order, complete and mail the order form on the reverse side.

Vereinigeſte.
W &
Ouroboros

September 16-17, 1981

Lister Hill Center Auditorium
National Library of Medicine
Bethesda, Maryland

# ORDER FORM

Please send ____________ copy (copies) of NTIS Order Number PB82-220922 at U.S. $12.00 for each copy to:

Name ______________________________

Organization ______________________________

Address ______________________________

______________________________

City ______________ State ______________ Zip ______________

Telephone: (        ) ______________________________

METHOD OF PAYMENT:

☐ Charge my NTIS deposit account no. ______________________________

☐ Purchase order no. ______________________________

☐ Check enclosed for $ ______________________________

☐ Charge to my ☐ American Express ☐ Visa ☐ Master Card

Account no. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Card expiration date ______________________________

Signature ______________________________
(Required to validate order)

MAIL ORDER TO:

National Technical Information Service (NTIS)
U.S. DEPARTMENT OF COMMERCE
5285 Port Royal Road
Springfield, Va. 22161

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

### Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

### Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

### Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

### Performing Organization

Enter name of organization where work is actually being done.

### Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

### Project Summary

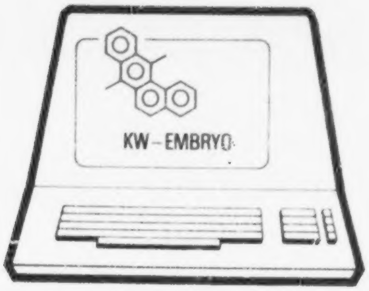
Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

### Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

☆U.S. GOVERNMENT PRINTING OFFICE: 1982 381-756/509 1-3



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# TOXLINE

TOXICOLOGY INFORMATION ONLINE

# CONDENSED

---

Bethesda, Maryland 20209

---

**TOXLINE DEFINED**

TOXLINE (TOXicology Information on-LINE) is the National Library of Medicine's extensive collection of computerized toxicology information containing over 400,000 references to published human and animal toxicity studies, effects of environmental chemicals and pollutants, adverse drug reactions, and analytical methodology. This rapidly expanding data base, assembled by the Toxicology Information Program and updated monthly, contains full bibliographic citations, almost all with abstracts and/or indexing terms, and Chemical Abstracts Service (CAS) Registry Numbers. TOXLINE grows at the rate of approximately 140,000 records/year. Older information is in the TOXLINE backfiles, TOXBACK74 (1974–1978, with over 350,000 references) and TOXBACK65 (pre–1965 through 1973, with 387,377 references). TOXLINE information is derived from five major secondary sources (1–5) and six special collections (6–11) of material.

**TOXLINE ACCESSED**

TOXLINE is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities. TOXLINE and TOXBACK74 are available online at NLM, while TOXBACK65 is available only through offsearch at NLM.

**TOXLINE SEARCHED**

Citations on a given subject may be retrieved from TOXLINE by entering the desired free text terms as they appear in titles, keywords, and abstracts of articles. Chemical substances can be searched by entering their corresponding Chemical Abstracts Service (CAS) Registry Numbers, and/or synonyms, obtained from the CHEMLINE file. There is no controlled vocabulary governing the inclusion or exclusion of terms in TOXLINE. Terms may be entered as a single term or combined by means of the Boolean operators AND, OR and AND NOT. Searches may be limited to specific publication years. Citations and abstracts may be printed online at the user's terminal, or offline and mailed to the user from NLM. Users may select a print format varying from a brief identification of author(s), title, and source to a complete listing of the bibliographic record, including the abstract. Citations may be SORTed at the user's initiation in OFFSEARCH or offline printing.

**TOXLINE SDI's**

Users may store their own searches, to run monthly against the updated material, or have automatic SDI's run in batch mode by NLM once they have been tested and submitted to NLM for processing.

**TOXLINE AVAILABILITY**

TOXLINE is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 5:00 P.M. (Eastern Time.)

**TOXLINE COST**

The cost of access to TOXLINE and its backfiles is $52 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $45 per hour at all other times. There is a charge of $0.35 for each page of offline printout.

**TOXLINE USER SERVICES**

For Online Systems services including access to the TOXLINE file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-6193

For TOXLINE content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

[illegible]
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

NEWARK PUBLIC LIBRARY

JAN 31 1983

U. S. GOVT. PUBS.
DEPOSITORY 37[illegible]

PB82-915009
NUMBER 76
SEPTEMBER 1982

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## TABLE OF CONTENTS

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
13 Carcinogenesis Bioassay of 3,3'-Dimethylbenzidine
15 Carcinogenesis Bioassay of Turmeric Oleoresin (Curcumin)
17 Carcinogenesis Bioassay of Allyl Glycidyl Ether
19 Carcinogenesis Bioassay of Benzaldehyde
21 Carcinogenesis Bioassay of d-Carvone
23 Carcinogenesis Bioassay of Diphenylhydantoin (Phenytoin)
25 Carcinogenesis Bioassay of Ethylenethiourea
27 Carcinogenesis Bioassay of Furan
29 QUARTERLY INDEX OF COMPOUNDS
34 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
39 SUPPORTING AND PERFORMING ORGANIZATIONS
44 NICKEL IN THE HUMAN ENVIRONMENT
45 NOTICE OF RESEARCH PROJECT BLANK FORM
47 TDB CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20.3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road  Springfield, VA  22161

Annual Rates:
North American Continent addresses  $40
All others  $80
Bulk rates available on request from NTIS

FROM THE EDITOR

Annotated bibliographies on current topics in toxicology have been produced as a part of the IRCC (Information Response to Chemical Concerns) Project. Seven documents were prepared during 1980 - 1982, and they are available for purchase from the Federation of American Societies for Experimental Biology (FASEB).

Most recently published is the bibliography HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM. This, and earlier documents in the series, are described on the following page, where an order coupon is included for your convenience.

Carol B. Haberman

EDITOR, TOX-TIPS

# ANNOTATED BIBLIOGRAPHIES ON CURRENT TOPICS IN TOXICOLOGY

Federal organizations concerned with toxic substances share a common need for basic information about chemical substance(s) and related topics. In recognition of this, several government agencies have joined in establishing the Information Response to Chemical Concerns (IRCC) Project. One objective of this Project is to produce annotated bibliographies on current topics in toxicology. These bibliographies are prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine and published by the Federation of American Societies for Experimental Biology.

The IRCC Project is sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Diesease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The following annotated bibliographies are now available.

**NLM/TIRC-80/1 HEALTH AND ENVIRONMENTAL EFFECTS OF ACID RAIN.** *An abstracted literature collection 1966-1979.* N. S. Dailey and S. G. Winslow, Toxicology Information Response Center, March 1980. 202 pages. $15.00 postpaid.

Major subject categories include: *Atmospherics; Aquatic and Terrestrial Environmental Effects; Health Effects; Measurement Methods; Modeling.* A listing of current research projects, including a brief description, sponsor and principal investigator, is provided at the end of the bibliography.

**NLM/TIRC-80/2 ASBESTOS IN AIR.** *A bibliography with abstracts 1964-1980.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, July 1980. 52 pages. $7.00 postpaid.

This bibliography includes references pertaining to quantitative methods of determining airborne asbestos particles and quantitative levels of atmospheric asbestos fibers. A permuted title index (KWOC) is also provided.

**NLM/TIRC-80/3 CHEMICAL WASTE DISPOSAL—Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes.** *A selected bibliography with abstracts 1964-1979.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, November 1980. 82 pages. $10.00 postpaid.

References are categorized in the following topical areas: *Adverse Effects* on Aquatic Species, Terrestrial Species and Vegetation; *Methods of Disposal* including burial, injection, landfill, spray and water; *Radioactive Waste Disposal; Environmental Impact* including analysis, monitoring, identification, environmental contamination and transport; *Health Effects* including biological studies, toxicity, tissue accumulation and mortality data for aquatic and terrestrial animals.

**NLM/TIRC-80/4 HEALTH ASPECTS OF UREA/FORMALDEHYDE COMPOUNDS.** *A selected bibliography with abstracts 1963-1980.* N. P. Drago, J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, December 1980. 52 pages. $7.50 postpaid.

Each of the 134 references contains a citation in alphabetical order by author and an abstract where available. A title index is also provided. A number of the references (44%) pertain to urea-formaldehyde compounds used in home insulation and in the fabrication of construction materials.

**NLM/TIRC-81/1 TOXICITY OF VANADIUM COMPOUNDS.** *A Bibliography with Abstracts 1965-1980.* N. S. Dailey, S. A. Mashburn and S. G. Winslow, Toxicology Information Response Center, July 1981. 100 pages. $15.00 postpaid.

This report was produced primarily because of concern for the effects of potential exposure to vanadium compounds associated with synthetic fuel processes. The 261 references each contain a citation as well as an abstract where available. A title index and chemical name index are also provided.

**NLM/TIRC-81/2. THE EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE IMMUNE SYSTEM.** *A selected bibliography with Abstracts, 1969-1980.* By S. G. Winslow, TIRC, Oak Ridge National Laboratory. November 1981, 78 pages, $10.00 postpaid.

The report contains 216 references, each containing a citation (in alphabetic order by author), an abstract (where available), chemical name(s), and species used. Several indices (chemical name, species, and title) are provided. Sources searched included ten DIALOG$^R$ files plus MEDLINE and TOXLINE.

**NLM/TIRC-82/1. HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM.** *A selected bibliography with Abstracts, 1963-1981.* By J. G. Pruett and S. G. Winslow. Toxicology Information Response Center, October 1982. 62 pages. $10.00 postpaid.

The report contains 305 reference, including citations on occupational or inadvertent (environmental) exposure to chemicals. Each listing contains a citation, an abstract (where available), chemical name(s) (if specified), and keywords. Information concerning current research projects and reviews are in separate sections at the end of the bibliography. A total of ten DIALOG$^R$ and MEDLARS$^R$ sources were searched.

---

**ORDER FORM—**

**NLM/TIRC ANNOTATED BIBLIOGRAPHIES**

| | | |
|---|---|---|
| ☐ | NLM/TIRC 80/1 Health and Environmental Effects of Acid Rain | $15.00 |
| ☐ | NLM/TIRC 80/2 Asbestos in Air | $ 7.00 |
| ☐ | NLM/TIRC 80/3 Chemical Wast Disposal | $10.00 |
| ☐ | NLM/TIRC 80/4 Health Aspects Urea/Formaldehyde Compounds | $ 7.50 |
| ☐ | NLM/TIRC 81/1 Toxicity of Vanadium Compounds | $15.00 |
| ☐ | NLM/TIRC 81/2 The Effects of Environmental Chemicals on the Immune System | $10.00 |
| ☐ | NLM/TIRC 82/1 Health Effects of Environmental Chemicals on the Adult Reproductive System | $10.00 |

Send your check or purchase order to: F.A.S.E.B. Special Publications, 9650 Rockville Pike, Bethesda, MD 20814

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

## JOURNAL LITERATURE

Soliman, S.A. et al. Species susceptibility to delayed toxic neuropathy in relation to *in vivo* inhibition of neurotoxic esterase by neurotoxic organophosphorus esters. *J Toxicol Environ Health* 9, 189-197, 1982.

Tri-o-cresyl phosphate (TOCP) and O-Et-O-(4-cyanophenyl) phenylphosphonothioate, both known delayed neurotoxic agents, produced approximately 90% inhibition of "...brain neurotoxic esterase activity" (NTE), in chickens, but in mice each compound produced approximately half that inhibition and no recognizable clinical symptoms. The authors conclude: "Thus the difference between chickens and mice in susceptibility to neurotoxic organophosphates may be attributed to inhibition specificity of NTE forms in the brain in these two different animal species and/or the inability of the active metabolites of these neurotoxic compounds to reach the site of action."

Watson, D.H. and Lindsay, D.G. A critical review of biological methods for the detection of fungal toxins in foods and foodstuffs. *J Sci Food Agric 33*, 59-87, 1982.

This review discusses 78 references pertinent to the subject.

Becker, C.D. and Crass, D.W. Examination of procedures for acute toxicity tests with the fathead minnow and coal synfuel blends. *Arch Environ Contam Toxicol 11*, 33-40, 1982.

Flow-through procedures were found to be more stable in terms of providing the minnows with relatively constant levels of oxygen and phenolics than static procedures. The flow-through tests were considered adequate to measure toxicity of aqueous extracts from liquified coal. The authors caution, however, that laboratory tests may not portray field conditions accurately because, in the field, biodegradation as well as other interactions in the environment may have significant influence.

Penning. W. and Town, W.G. Development of the toxicological files in environmental chemicals data and information network (ECDIN). *Clin Toxicol 18*, 169-181, 1981.

A data base furnishing information on potentially toxic chemicals has been initiated by the Joint Research Centre of the Commission of the European Communities and their research institutions. The project will be developed as part of the environmental research program of those countries. The data being stored have been obtained from the original literature and evaluated by specialists in the field. All phases of the chemical substance are covered including identification, chemical and physical properties, analytical methods, hazards of manufacture and distribution as well as use, treatment of poisoning, toxic effects both clinical and laboratory, etc.

Case, D.E. The state of the art: a commentary on the current practice of metabolism and pharmacokinetic studies in the pharmaceutical industry. *Xenobiotics 11,* 803-14, 1981.

Four points are considered by the author: 1. The role of those making safety evaluations on the basis of studies of metabolism and pharmacokinetics. 2. Some of the classical concepts of drug action may require reevaluation and restatement in the future. If this occurs methods which now appear adequate may need to be changed. 3. Study design as related to the broad context of regulatory requirements. 4. New proposals may affect the design of metabolic and pharmacokinetic experiments and their evaluation in the future.

Chanter, D.O. and Heywood, R. The LD50 test: some considerations of precision. *Toxicol Lett 10,* 303-7, 1982.

The LD50 test can be improved by the use of modern methods of statistical analysis, and some changes in test design including the use of sequential methods. Such improvements would make it possible to reduce the number of animals used to 10-20 without the loss of precision.

Schramm, T. Short-term tests in assessment of cancer risks and in the primary prevention of occupational cancer. *Arch Geschwulstforsch 52*, 75-81, 1982.

> Short-term tests are a valuable adjunct to data obtained from epidemiological studies or from long-term studies on animals. The short-term tests, instead of depending upon tumor formation, are based on the interaction between chemicals (or their metabolites) and cellular macromolecules such as DNA. "Sensitivity, specificity, and prediction value are important criteria of short-term tests." Metabolic changes may markedly influence the results. "However ...the conclusive demonstration... of a carcinogen ..requires the significant induction of tumors *in vivo*."

Nakajima, T., Koyama, Y., and Sato, A. Dietary modification of metabolism and toxicity of chemical substances--with special reference to carbohydrates. *Biochem Pharmacol 31*, 1005-11, 1982.

> Toxic liver injury, at least in the case of carbon tetrachloride, may bear a definite relationship to the diet of the test animals. The smaller the carbohydrate intake, the more marked the liver injury. The authors demonstrated this effect using isocaloric diets in which the calories lost by carbohydrate restriction were replaced by increased amounts of fat and protein.

Boling, R.H. Jr. A technique for computer-controlled toxicant injection. *Bull Environ Contam Toxicol 27*, 773-4, 1981.

Longacre, S.L., Kocsis, J.J. and Snyder, R. Influence of strain differences in mice on the metabolism and toxicity of benzene. *Toxicol Appl Pharmacol 60*, 398-409, 1981.

The toxicity of benzene to bone marrow is thought to be due to a metabolite. In studies on the C57BL/6 and the DBA/2 strains of mice, the latter strain was found to be more susceptible although no differences in the total urinary metabolites could be found between the two species. However, marked differences occurred in the proportions of the various metabolites. Other factors as well as differences in benzene metabolites may have contributed to the situation such as differences in Vmax values for UDPGA utilization and for phenylsulfate formation. The authors suggest, therefore, that "difference in susceptibility ...was not the result of a single factor but the sum total of a number of metabolic events."

Keck, G. Specific differences in pharmacokinetics of chemicals: Correlation with toxicity. *Toxicol Eur Res 3,* 207-215, 1981.

The characteristics of chemicals from absorption through distribution and involvement in body processes to excretion were studied in both laboratory and domestic animals. The differences are discussed from their toxicological and pharmacological bases including experimental, theoretical and practical (veterinary).

Mueller, H. G. Use of an electronic particle counter to determine the number of young Daphnia-Magna in ECO toxicological reproduction tests. *Bull Environ Contam Toxicol 27,* 440-441, 1981.

Soliman, S.A., Curley, A. and El Sebae, A.K. A direct method to assay neurotoxic esterase activity. *Toxicol Lett (Amst) 9,* 283-288, 1981.

This paper describes a direct photometric method to assay neurotoxic esterase (NTE) activity in microsomal preparations from chicken brain. For this method, the most hydrolyzable esters were 4-nitrophenyl valerate and caproate. The others tested, e.g. 4-nitrophenyl esters of proprionic, butyric, lauric, capric, were not as good substrates.

Dean, J.H. et al. Procedures available to examine the immunotoxicity of chemicals and drugs. *Pharmacol Rev 34,* 137-48, 1982.

Immunology offers great advantages in the assessment of the toxicity of drugs and in the determination of their safety. Before this opportunity can be well utilized, more information is needed on several points, i.e. the correlation between immune function and host resistance changes, and better standardized methods for immunotoxicity screening. The studies presented in this paper are preliminary examples of *in vitro* methods using microsomal activation techniques to screen chemicals for immunotoxicity, or induction of hypersensitivity or allergy, and to examine the relation between chemical structure and immunotoxicity.

Takagi, H., Namai, H. and Murakami, K.I. Evaluation of the hematoxylin staining method for detecting wheat tolerance to aluminum. *JPN J Breed* 31, 152-160, 1981.

The inhibition of root cell division is an important method of measuring the effects of toxicants upon plants. This method has been used in the past to determine the resistance of various strains of wheat to aluminum. Tolerance to aluminum leads to a lower accumulation of aluminum in the roots than occurs in susceptible plants. The hematoxylin method gave results comparable to the nutrient solution culture method and was simpler and faster.

Tucker, A.N. et al. *In vitro* immunotoxicological assays for detection of compounds requiring metabolic activation. *Environ Health Perspect 43,* 123-7, 1982.

Cyclophosphamide (CP) was activated by a crude microsomal fraction of mouse liver supplemented by the necessary cofactors. This preparation was "...interfaced with three murine cell culture assays for immunotoxicity." The absence of toxic activity by CP unless the liver microsomal preparation plus the necessary cofactors was shown. Under optimal conditions for metabolic activation of the CP a dose related effect could be demonstrated.

Bronaugh, R.L., Stewart, R.F. and Conger, E.R. Methods for *in vitro* percutaneous absorption studies. II. Animal models for human skin. *Toxicol Appl Pharmacol 62*, 481-8, 1982.

Frank, S.B. Is the rabbit ear model, in its present state, prophetic of acnegenicity? *J Am Acad Dermatol 6*, 373-7, 1982.

The use of the rabbit ear model in the bioassay of preparations for topical application presents many problems. This review discusses these problems and the limitations of the conclusions that can be drawn from the results.

Feldman, R.G., Ricks, N.L., and Baker, E.L. Neuropsychological effects of industrial toxins: a review. *Am J Industr Med 1*, 211-27, 1980.

The value of standardized neuropsychological tests in the evaluation of exposure to industrial toxins has been significant. This review discusses these tests and their utilization in an occupational setting.

Baloh, R.W., Lanshofer, L., Brown, C.P., and Spivey, G.H. Quantitative eye tracking tests in lead workers. *Am J Industr Med 1*, 109-13, 1980.

In this paper eye tracking tests are considered only in connection with lead poisoning, but the same test could be used in any situation where toxic effects may be manifest in eye movements. The test is "...A microcomputer system for on-line analysis of saccadic and smooth pursuit tracking eye movements..."

## NEW BOOKS

Paccagnella, B. and Murphy, S. Assessment of multichemical contamination. Proceedings of an international workshop, Milan, Italy, April 28-30, 1981. National Academy Press, Washington, D.C. 1982.

## GOVERNMENT PUBLICATIONS

Determination of chemical residues in whole blood of selected Love Canal area residents. Prepared for U.S. Department of Justice by Health Effects Research Laboratory, Research Triangle Park, NC 27711. Environmental Protection Agency EPA-600/1-80-0036, September 1980.

## GOVERNMENT REPORTS

(Available from National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161)

Thomas, R. et al. Evaluation of short-term bioassays to predict functional impairment. Selected short-term hepatic toxicity tests report; ISS MTR-80W00232; Order No. AD-A104762, 1980, 174pp.

> A review of short-term bioassays used to predict effects of short-term exposure to various chemicals upon the liver. No references are given.

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

**Contract No: and/or Control No:** NTP No. 11045-W
NCI No. C99990

PROJECT TITLE:

Carcinogenesis Bioassay of 3,3'-Dimethylbenzidine

INVESTIGATOR(S):

Dr. J. Mennear

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION

**Name and Address Including Zip Code:**
Hazelton Laboratories
9200 Leesburg Pike
Vienna, VA 22180

PERIOD FOR THIS NRP

**Start Date:** February 1981
**End Date:**
**Annual Funding:**

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, 3,3'-dimethylbenzidine, a chemical used in dyes, is being administered to rats and mice via the drinking water. Prechronic testing began during March 1982.

CAS Registry No.
3,3'-Dimethylbenzidine 119-93-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Allaben WT ; Schieferstein GJ
CARCINOGENIC EFFECT OF DIMETHOXYBENZIDINE, DICHLOROBENZIDINE,
DIMETHYLBENZIDINE AND 4-AMINOBIPHENYL
Toxicology Research Projects Directory, Vol.04 iss.12 1979

Allaben W
CARCINOGENIC EFFECT OF 3,3'-DIMETHYLBENZIDINE
Toxicology Research Projects Directory, Vol.04 iss.07 1979

HARTMAN CP ; FULK GE ; ANDREWS AW
AZO REDUCTION OF TRYPAN BLUE TO A KNOWN CARCINOGEN BY A CELL-FREE
EXTRACT OF A HUMAN INTESTINAL ANAEROBE
MUTAT RES; 58:125-132,1978

INT AGENCY RES CANCER
WHO INTERNATIONAL AGENCY FOR RESEARCH ON CANCER MONOGRAPHS ON THE
EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS VOL.
1-20 SUPPLEMENT 1. CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED
WITH CANCER IN HUMANS LYON FRANCE JAN. 15-17 1979
WHO. IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER)
MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF
CHEMICALS TO HUMANS, VOLS. 1-20, SUPPL. 1. CHEMICALS AND
INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS; LYON,
FRANCE, JAN. 15-17, 1979. XI+71P. WHO: GENEVA, SWITZERLAND.
PAPER. ISBN 92-832-1402-1.; 0 (0). 1979 (RECD. 1980). XI+71P.

Venable HL
Criteria for a Recommended Standard: Occupational Exposure to
o-Tolidine
Govt Reports Announcements & Index (GRA&I), Issue 23, 1981

Boeniger M
EXPOSURE CHARACTERIZATION OF AZO DYES
Toxicology Research Projects Directory, Vol.06 iss.05 1981

TANAKA K ; MARUI S ; MII T
MUTAGENICITY OF EXTRACTS OF URINE FROM RATS TREATED WITH AROMATIC
AMINES
MUTAT RES; 79:173-176,1980

Lynn RK ; Donielson DW ; Ilias AM ; Kennish JM ; Wong K
Matthews HB
Metabolism of bisazobiphenyl dyes derived from benzidine,
3,3'-dimethylbenzidine or 3,3'-dimethoxybenzidine to carcinogenic
aromatic amines in the dog and rat.
Toxicol Appl Pharmacol; VOL 56, ISS 2, 1980, P248-58

Walker B Jr ; Gerber A
Occupational exposure to aromatic amines: benzidine and
benzidine-based dyes.
Natl Cancer Inst Monogr, ISS 58, 1981, P11-3

Jones TC
TSCA Chemical Assessment Series Preliminary Risk Assessment,
Phase 1: Benzidine, Its Congeners and Their Derivative Dyes and
Pigments
Govt Reports Announcements & Index (GRA&I), Issue 21, 1982

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** NTP No. 10105-J
NCI No. C60015

**PROJECT TITLE:**
Carcinogenesis Bioassay of Turmeric Oleoresin (Curcumin)

**INVESTIGATOR(S):**
Dr. C. K. Grieshaber

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.** Mason Research Institute
Worcester, MA 01608

**PERIOD FOR THIS NRP**
**Start Date:** August 1979
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, turmeric oleoresin (curcumin) is being administered to rats and mice via the feed. Prechronic testing began during March 1982.

CAS Registry No.
Turmeric oleoresin (curcumin) 8024-37-1
Curcumin 458-37-7

**The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.**

Shankar TN ; Shantha NV ; Ramesh HP ; Murthy IA ; Murthy VS
Toxicity studies on turmeric (Curcuma longa): acute toxicity studies in rats, guineapigs & monkeys.
Indian J Exp Biol; VOL 18, ISS 1, 1980, P73-5

Govindarajan VS
Turmeric--chemistry, technology, and quality.
CRC Crit Rev Food Sci Nutr; VOL 12, ISS 3, 1980, P199-301 (REF: 185)

RAVINDRANATH V ; CHANDRASEKHARA N
Absorption and tissue distribution of curcumin in rats.
TOXICOLOGY; 16 (3). 1980. 259-266.

RAVINDRANATH V ; CHANDRASEKHARA N
In vitro studies on the intestinal absorption of curcumin in rats.
TOXICOLOGY; 20 (2-3). 1981. 251-258.

Ito S
Curcuma (turmeric)
Koryo; VOL 134,, 1981,41-4

Khanna MM ; Singh S ; Sarin JP S
The metabolic disposition of curcumin in rats
Indian Drugs; VOL 19, ISS 1, 1981,31

AU W ; HSU TC
STUDIES ON THE CLASTOGENIC EFFECTS OF BIOLOGIC STAINS AND DYES
ENVIRON MUTAGENESIS; 1:27-35,1979

SANKARANARAYANAN N ; MURTHY MSS
TESTING OF SOME PERMITTED FOOD COLORS FOR THE INDUCTION OF GENE CONVERSION IN DIPLOID YEAST
MUTAT RES; 67:309-314,1979

ABRAHAM SK ; KESAVAN PC
EVALUATION OF POSSIBLE MUTAGENICITY OF GINGER, TURMERIC, ASAFOETIDA, CLOVE AND CINNAMON ADMINISTERED ALONE AND IN COMBINATION WITH CAFFEINE OR THEOPHYLLINE IN DROSOPHILA MELANOGASTER
MUTAT RES; 53:142,1978

ABRAHAM S ; ABRAHAM SK ; RADHAMONY G
MUTAGENIC POTENTIAL OF THE CONDIMENTS GINGER AND TURMERIC
CYTOLOGIA; 41:591-595,1976

GOODPASTURE CE ; ARRIGHI FE
EFFECTS OF FOOD SEASONINGS ON THE CELL CYCLE AND CHROMOSOME MORPHOLOGY OF MAMMALIAN CELLS IN VITRO WITH SPECIAL REFERENCE TO TURMERIC
FOOD COSMET TOXICOL; 14:9-14,1976

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20203
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No: and/or Control No:** NTP No. 10824-H
NCI No. C56666

**PROJECT TITLE:**

Carcinogenesis Bioassay of Allyl Glycidyl Ether

**INVESTIGATOR(S):**

Dr. G. Boorman

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

**Name and Address Including Zip Code.** Battelle Pacific Northwest Laboratory
Richland, WA 99352

**PERIOD FOR THIS NRP:**

**Start Date:** December 1979
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, allyl glycidyl ether, a solvent, is being administered to rats and mice by inhalation. Chronic testing began during May 1982.

CAS Registry No.
Allyl glycidyl ether 106-92-3

TOX-TIPS SEPTEMBER 1982 76-17

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

BRIDIE AL ; WOLFF C JM ; WINTER M
Biochemical oxygen demand and chemical oxygen demand of some petrochemicals.
WATER RES; 13 (7). 1979. 627-630.

Bridie AL ; Wolff CJ M ; Winter M
The acute toxicity of some petrochemicals to goldfish
Water Res.; VOL 13, ISS 7, 1979,623-6

Lane JM
Glycidyl ethers
Vet. Hum. Toxicol.; VOL 22, ISS 2, 1980,99-101

Douglas JF
CARCINOGENESIS BIOASSAY OF ALLYL GLYCIDYL ETHER
Toxicology Research Projects Directory, Vol.06 iss.03 1981

Wade MJ ; Moyer JW ; Hine CH
Mutagenic action of a series of epoxides.
Mutat. Res. 66(4): 367-371 1979 (9 References)

WEBSTER DA ; GROSS J
STUDIES ON POSSIBLE MECHANISMS OF PROGRAMMED CELL DEATH IN THE CHICK EMBRYO
DEV BIOL; 22:157-184,1970

HATHWAY DE
MECHANISMS OF CHEMICAL CARCINOGENESIS
HATHWAY, D. E. SPECIALIST PERIODICAL REPORTS: FOREIGN COMPOUND METABOLISM IN MAMMALS, VOL. 6. A REVIEW OF LITERATURE PUBLISHED DURING 1978 AND 1979. XVI+390P. ROYAL SOCIETY OF CHEMISTRY: LONDON, ENGLAND. ILLUS. ISBN 0-85186-058-3.; 0 (0). 1981. P160-197.

Hemminke K ; Falk K ; Vainio H
Alkylation in vitro: comparison of alkylation rate and mutagenicity
Gig. Tr. Prof. Zabol.; ISS 1, 1982,43-4

VOOGD CE ; VAN DER STEL JJ ; JACOBS J J J AA
The mutagenic action of aliphatic epoxides.
MUTAT RES; 89 (4). 1981. 269-282.

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** NTP No. 10087-A
NCI No. C56133

**PROJECT TITLE:**
Carcinogenesis Bioassay of Benzaldehyde

**INVESTIGATOR(S):**
Dr. W. M. Kluwe

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.**
Southern Research Institute
Birmingham, AL 35205

**PERIOD FOR THIS NRP:**
**Start Date:** November 1978
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, benzaldehyde is being administered to rats and mice by gavage. Chronic testing began during January 1982.

CAS Registry No.
Benzaldehyde 100-52-7

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Envirdnmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Kutzman RS ; Meyer GJ ; Wolf AP
Biodistribution and excretion of [11C]benzaldehyde by the rat after two-minute inhalation exposures.
Xenobiotica; VOL 10, ISS 4, 1980, P281-8

Kochi M ; Takeuchi S ; Mizutani T ; Mochizuki K ; Matsumoto Y
Saito Y
Antitumor activity of benzaldehyde.
Cancer Treat Rep; VOL 64, ISS 1, 1980, P21-3

Ellis DD ; Jone CM ; Larson RA ; Schaeffer DJ
Organic constituents of mutagenic secondary effluents from wastewater treatment plants
Arch. Environ. Contam. Toxicol.; VOL 11, ISS 3, 1982,373-82

Katou T ; Hanai Y ; Sato H
Organic pollutants in wastewaters from pharmaceutical plants
Yokohama Kokuritsu Daigaku Kankyo Kagaku Kenkyu Senta Kiyo; VOL 8, ISS 1, 1982,63-71

VON KROGH G ; MAIBACH HI
THE CONTACT URTICARIA SYNDROME AN UPDATED REVIEW
J AM ACAD DERMATOL; 5 (3). 1981. 328-342.

ODA Y ; HAMANO Y ; INOUE K ; YAMAMOTO H ; NIIHARA T ; KUNITA N
MUTAGENICITY OF FOOD FLAVORS IN BACTERIA. 1.
OSAKA-FU KOSHU EISEI KENKYU HOKOKU,SHOKUHIN EISEI HEN;
9:177-181,1978

SASAKI Y ; ENDO R
MUTAGENICITY OF ALDEHYDES IN SALMONELLA
MUTAT RES; 54:251-252,1978

Nambata T ; Terada N ; Takeuchi S
Effect of benzaldehyde on the proliferation of HeLa cells
Gann; VOL 72, ISS 2, 1981,289-92

Nishimura M ; Umeda M ; Kusanagi A ; Urakabe R ; Yukimatsu K
Otawara S
Cytomorphological study of cultured mammalian cells treated with benzaldehyde, catechol and their derivatives with special reference to inhibition of DNA synthesis
Gann; VOL 72, ISS 2, 1981,272-9

FLORIN I ; RUTBERG L ; CURVALL M ; ENZELL CR
SCREENING OF TOBACCO SMOKE CONSTITUENTS FOR MUTAGENICITY USING THE AMES' TEST
TOXICOLOGY; 15:219-232,1980

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No and/or Control No:** NTP No. 10093-S
NCI No. C55867

**PROJECT TITLE:**
Carcinogenesis Bioassay of d-Carvone

**INVESTIGATOR(S):**
Dr. J.L. McCoy

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:**
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
**Name and Address Including Zip Code:**
International Research and
Development Corporation
Mattawan, MI 49071

**PERIOD FOR THIS NRP:**
**Start Date:** August 1978
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, d-Carvone, used in cosmetics, is being administered to rats and mice via gavage. Chronic testing began during June 1982.

CAS Registry No.
d-Carvone 2244-16-8

TOX-TIPS SEPTEMBER 1982 76-21

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

**The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.**

Kurita N ; Miyaji M ; Kurane R ; Takahara Y
Antifungal activity of components of essential oils
Agric. Biol. Chem.; VOL 45, ISS 4, 1981,945-52

Blair M
CARCINOGENICITY AND TOXICITY STUDY IN LABORATORY ANIMALS
Toxicology Research Projects Directory, Vol.07 iss.02 1981

Michaelis K ; Vostrowsky O ; Paulini H ; Zintl R ; Knobloch K
Essential oil from blossoms of Artemisia vulgaris L
Z. Naturforsch., C: Biosci.; VOL 37C, ISS 3-4, 1982,152-8

Marcus C ; Lichtenstein EP
Interactions of naturally occurring food plant components with insecticides and pentobarbital in rats and mice
J. Agric. Food Chem.; VOL 30, ISS 3, 1982,563-8

Nagano E ; Oritani T ; Yamashita K
Studies on abscisic acid. Part XIV. Synthesis and physiological activity of methyl 6',6'-didemethyl abscisate and new chiral analogs
Agric. Biol. Chem.; VOL 44, ISS 9, 1980,2095-8

Morris JA ; Khettry A ; Seitz EW
Antimicrobial activity of aroma chemicals and essential oils
J. Am. Oil Chem. Soc.; VOL 56, ISS 5, 1979,595-603

Rossi M ; Koch RB
Odorant responses of sodium-potassium ATPase activity by preparations from paired turbinals of rat olfactory tissue
Chem. Senses; VOL 6, ISS 2, 1981,113-17

Jones BB ; Clark BC Jr ; Iacobucci GA
Semipreparative high-performance liquid chromatographic separation of a characterized flavor mixture of monoterpenes
J. Chromatogr.; VOL 178, ISS 2, 1979,575-8

Baslas RK ; Singh AK
Chemical examination of essential oil of Tagetes minuta Linn
J. Indian Chem. Soc.; VOL 58, ISS 4, 1981,422-3

NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or. Control No:** NTP No. 10156-D
NCI No. C55765

**PROJECT TITLE:**

Carcinogenesis Bioassay of Diphenylhydantoin (Phenytoin)

**INVESTIGATOR(S):**

Dr. R. Chhabra

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

**Name and Address. Including Zip Code.** Battelle Columbus Laboratory
Columbus, OH 43201

**PERIOD FOR THIS NRP:**

**Start Date:** August 1979
**End Date:**
**Annual Funding:**

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogeresis bioassay, diphenylhydantoin (phenytoin), used in pharmaceuticals, is being administered to rats and mice in their feed. Chronic testing began during March 1982.

CAS Registry No.
Diphenylhydantoin (Phenytoin) 57-41-0

TOX-TIPS SEPTEMBER 1982 76-23

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Santi L ; Cesarone CF ; Bolognesi C ; Rossi L ; Barbieri O
Ottaggio L
CHEMICAL CARCINOGENS STUDIES - TRANSPLACENTAL CARCINOGENESIS AND APPLICATIONS OF SHORT-TERM TESTS TO ENVIRONMENTAL POLLUTANTS (ABBREV)
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Dukkers van Emden DM ; Koppe JG ; Peters G
PRENATAL EVENTS AND CANCER RISK IN THE OFFSPRING
Toxicology Research Projects Directory, Vol.06 iss.12 1981

Schaumann BA ; Mayersdorf A
GENETICS OF EPILEPSY AND EFFECTS OF ANTIEPILEPTIC DRUGS
Epidemiology Research Projects Directory, 1981

DELGADO A ; MOLINA J ; MUNOZ M ; EGUEES J ; MARTINEZ PENUELA V JM
NEUROBLASTOMA IN A CHILD WITH FETAL HYDANTOINIC SYNDROME
AN ESP PEDIAT; 13:433-436,1980

TAYLOR WF ; MYERS M ; TAYLOR WR
EXTRARENAL WILMS' TUMOR IN AN INFANT EXPOSED TO INTRAUTERINE PHENYTOIN
LANCET; 2:481-482,1980

ALLEN RW ; OGDEN B ; BENTLEY FL ; JUNG AL
FETAL HYDANTOIN SYNDROME,NEUROBLASTOMA,AND HEMORRHAGIC DISEASE IN A NEONATE
J AM MED ASS; 244:1464-1465,1980

ALLEN RW ; BUEHLER B ; OGDEN B ; BENTLEY FG ; JUNG AL
FETAL HYDANTOIN SYNDROME,NEUROBLASTOMA,AND HEMORRHAGIC DISEASE
PEDIATR RES; 14:530,1980

BLATTNER WA ; HENSON DE ; YOUNG RC ; FRAUMENI JF
MALIGNANT MESENCHYMOMA AND BIRTH DEFECTS.PRENATAL EXPOSURE TO PHENYTOIN
J AM MED ASS; 238:334-335,1977

PENDERGRASS TW ; HANSON JW
FETAL HYDANTOIN SYNDROME AND NEUROBLASTOMA
LANCET; 2:150,1976

SHERMAN S ; ROIZEN N
FETAL HYDANTOIN SYNDROME AND NEUROBLASTOMA
LANCET; 2:517,1976

JUCHAU MR ; CHAO ST ; OMIECINSKI CJ
DRUG METABOLISM BY THE HUMAN FETUS
CLIN PHARMACOKINET; 5 (4). 1980. 320-339.

PITOT HC
RELATIONSHIPS OF BIOASSAY DATA ON CHEMICALS TO THEIR TOXIC AND CARCINOGENIC RISK FOR HUMANS
SYMPOSIUM ON DETERMINANTS OF CANCER RELEVANT TO PREVENTION IN THE WAR ON CANCER. J ENVIRON PATHOL TOXICOL; 3 (4). 1980. 431-450.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No: and/or Control No:** NTP No. 10466-C
NCI No. C03372

**PROJECT TITLE:**

Carcinogenesis Bioassay of Ethylenethiourea

**INVESTIGATOR(S):**

Dr. R. Chhabra

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

**Name and Address. Including Zip Code.**

Battelle Columbus Laboratory
Columbus, OH 43201

**PERIOD FOR THIS NRP:**

**Start Date:** August 1979

**End Date:**

**Annual Funding:**

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, ethylenethiourea, used in pesticides, is being administered to rats and mice via the feed. Chronic testing began during August 1982.

CAS Registry No.
Ethylenethiourea 96-45-7

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830--Phone: 615-576-1743.

WEISBURGER EK ; ULLAND BM ; NAM J-M ; GART JJ ; WEISBURGER JH
Carcinogenicity tests of certain environmental and industrial chemicals.
J NATL CANCER INST; 67 (1). 1981. 75-88.

HANCOCK RL ; GERRITSEN N ; MEADOWS H
EFFECTS OF CHEMICAL CARCINOGENS ON BACTERIA AND YEAST A REVIEW
J TOXICOL ENVIRON HEALTH; 7 (3-4). 1981. 607-642.

KHERA KS ; WHALEN C ; IVERSON I
TERATOGENICITY OF ETHYLENE THIO UREA IN HAMSTERS AND ITS POTENTIATION BY SKF-525-A
20TH ANNUAL MEETING OF THE TERATOLOGY SOCIETY, PORTSMOUTH, N.H., USA, JUNE 8-12, 1980. TERATOLOGY; 21 (2). 1980. 49A.

Salamone MF
Toxicity of 41 carcinogens and noncarcinogenic analogs
Prog. Mutat. Res.; VOL 1, ISS Eval. Short-Term Tests Carcinog.: Rep. Int. Collab. Program, 1981,682-5

SANDERS BM ; DRAPER GJ
CHILDHOOD CANCER AND DRUGS IN PREGNANCY
BR MED J; 1:717-718,1979

SEELER RA ; ISRAEL JN ; ROYAL JE ; KAYE CI ; RAO S ; ABULABAN M
GANGLIONEUROBLASTOMA AND FETAL HYDANTOIN-ALCOHOL SYNDROMES
PEDIATRICS; 63:524-527,1979

AMLACHER E ; ZIEBARTH D
EFFECTIVENESS IN THE CARCINOGENICITY PRESCREENING. PARTIAL COMPARISON OF THE BACTERIAL MUTAGENICITY TEST (AMES), THE THYMIDINE INCORPORATION INHIBITING SCREENING SYSTEM (AMLACHER) AND THE PROMOTING ACTIVITY TEST (DANZ)
ARCH GESCHWULSTFORSCH; 49:490-494,1979

Iverson F ; Khera KS ; Hierlihy SL
In vivo and in vitro metabolism of ethylene thiourea in the rat and the cat.
Toxicol. Appl. Pharmacol. 52(1): 16-21 1980 (9 References)

WARZOK R ; MENDEL J ; THUST R ; BLAUFUSS E-M ; BATKA H ; SCHWARZ H
DIFFERENCES IN CARCINOGENICITY AFTER TRANSPLACENTAL AND POSTNATAL ADMINISTRATION OF DRUGS AND PESTICIDES
ARCH TOXICOL SUPPL; 4:25-28,1980

Warzok R ; Mendel J ; Thust R ; Blaufuss EM ; Batka H ; Schwarz H
Differences in carcinogenicity after transplacental and postnatal administration of drugs and pesticides
Arch. Toxicol., Suppl.; VOL 4,, 1980,25-8

ROSE D ; PEARSON CM ; ZUKER M ; ROBERTS JR
ETHYLENE THIO UREA CRITERIA FOR THE ASSESSMENT OF ITS EFFECTS ON MAN
NATL RES COUNC CAN ASSOC COMM SCI CRITER ENVIRON QUAL PUBL; 0 (18469). 1980 (RECD. 1981). 1-149.

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10119-H
NCI No. C56202

PROJECT TITLE:
Carcinogenesis Bioassay of Furan

INVESTIGATOR(S):
Dr. R. Irwin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.
Southern Research Institute
Birmingham, AL 35205

PERIOD FOR THIS NRP:
Start Date: November 1978
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (19 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, furan is being administered to rats and mice by gavage. Chronic testing began during May 1982.

CAS Registry No.
Furan 110-00-9

TOX-TIPS SEPTEMBER 1982 76-27

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

COCKCROFT DW ; JONES G ; TARLO SM ; CARTIER A ; DOLOVICH J
HARGREAVE FE
ASTHMA CAUSED BY OCCUPATIONAL EXPOSURE TO A FURAN BASED BINDER SYSTEM
36TH ANNUAL MEETING OF THE AMERICAN ACADEMY OF ALLERGY, ATLANTA, GA., USA, FEB. 16-20, 1980. J ALLERGY CLIN IMMUNOL; 65 (3). 1980. 168-169.

Vilisov BA ; Irger NS ; Kremko LM ; Pavlyutina ZN ; Tseluiko IG
Danishevich YS ; Khudnitskii SS
Hygienic evaluation of some synthetic resins and their effect on the health of molding department workers
Zdravookhr. Beloruss.; ISS 1, 1980,31-4

Boyd MR
Biochemical mechanisms in pulmonary toxicity of furan derivatives
Rev. Biochem. Toxicol.; VOL 2,, 1980,71-101

EGLE J L JR ; GOCHBERG BJ
Respiratory retention and acute toxicity of furan.
AM IND HYG ASSOC J; 40 (4). 1979. 310-314.

Pankova VB
Occupational allergies of the upper respiratory system
Zh. Ushn., Nos. Gorl. Bolezn.; ISS 3, 1981,42-7

RIGBY LJ
The collection and identification of toxic volatiles from plastics under thermal stress.
ANN OCCUP HYG; 24 (4). 1981 (RECD. 1982). 331-346.

Schultz TW ; Dumont JN ; Clark BR ; Buchanan MV
Embryotoxic and teratogenic effects of aqueous extracts of tar from a coal gasification electrostatic precipitator
Teratog., Carcinog., Mutagen.; VOL 2, ISS 1, 1982,1-11

Palmer WG ; Moorman W ; Stettler L ; James R ; Scholz R
Analyses of effluents collected from four types of iron casting molds for use in carcinogenesis bioassays
Trans. Am. Foundrymen's Soc.; VOL 89,, 1981,653-8

Elder VA ; Proctor BL ; Hites RA
Organic compounds near dumpsites in Niagara Falls, New York
Biomed. Mass Spectrom.; VOL 8, ISS 9, 1981,409-15

## QUARTERLY INDEX OF COMPOUNDS

This quarterly index lists compounds under test and those for which tests have been completed and published. The index will be updated and reprinted in the December, 1982 issue. Citations for compounds announced as under test give the issue number and page for TOX-TIPS. Those for which testing has been completed and published cite the journal or other report in which test data can be found.

National Toxicology Program/National Cancer Institute Bioassay Reports may be ordered from the National Technical Information Service, Springfield, Virginia 22161, using the PB-number cited.

- Acetaldehyde
  - Hamster - inhalation - carcinogenicity...68:19
  - Hamster - intratracheal - carcinogenicity...68:19
- Acetonitrile
  - Short term...70:23
- Airborne effluents
  - Inhalation - mutagenicity - cytotoxicity...73:13
- Allyl glycidyl ether
  - Mouse - inhalation - carcinogenicity...76:17
  - Rat - inhalation - carcinigenicity...76:17
- Barium chloride
  - Short term...70:25
- Benzaldehyde
  - Mouse - gavage - long-term - carcinogenicity...76:19
  - Rat - gavage - long-term - carcinogenicity...76:19
- o-Benzyl-p-chlorophenol
  - Mouse - short-term - carcinogenicity...72:13
  - Rat - short-term - carcinogenicity...72:13
- 2-Bromo-4,6-dinitroaniline
  - Toxicological characterization...69:9
- beta-Bromo-beta-nitrostyrene
  - Toxicological characterization...69:11
- Butyraldehyde
  - Carcinogenicity...72:11
- Cadmium nitrate
  - Toxicological characterization...69:13
- Cadmium oxide
  - Carcinogenicity...68:21
- Cadmium sulfide
  - Carcinogenicity...68:23
- Carbon disulfide
  - Mouse - inhalation - 90-day...71:39
  - Rat - inhalation - 90-day...71:39
- d-Carvone
  - Mouse - gavage - long-term - carcinogenicity...76:21
  - Rat - gavage - long-term - carcinogenicity...76:21

Chlorine
  Monkey - inhalation - carcinogenicity - 24-month...71:41
  Rat - inhalation - carcinogenicity - 24-month...71:41
Chloramine
  Mouse - water - long-term - carcinogenicity...72:23
  Rat - water - long-term - carcinogenicity...72:23
4-Chloro-2-nitroaniline
  Short term...70:27
Chlorothen
  Carcinogenicity...72:25
Coal combustion emissions
  Inhalation - mutagenicity - cytotoxicity...73:15
Curcumin
  Mouse - feed - carcinogenicity...76:15
  Rat - feed - carcinogenicity...76:15
o-Dichlorobenzene
  Adult rat liver cells - carcinogenicity...75:17
Diesel exhaust
  Inhalation - long-term - carcinogenicity - mutagenicity...73:17
Diesel particulates
  Inhalation - short-term - carcinogenicity - mutagenicity...73:17
1,8-Dihydroxy-4,5-dinitroanthraquinone
  Toxicological characterization...69:19
Dimethylamine
  Mouse - inhalation - 24-month...71:27
  Rat - inhalation - 24-month...71:27
3,3'-Dimethoxybenzidine
  Carcinogenicity...68:25
  Rat - water - Carcinogenicity...76:13
Diphenylhydantoin (Phenytoin)
  Mouse - feed - long-term - carcinogenicity...76:23
  Rat - feed - long-term - carcinogenicity...76:23
C. I. Acid Red 114
  Rat - water - short-term - carcinogenicity...72:15
C. I. Direct Blue 1
  Carcinogenicity...68:25
C. I. Direct Blue 2
  Carcinogenicity...72:17
C. I. Direct Blue 15
  Carcinogenicity...68:25
  Rat - water - carcinogenicity...68:27
C. I. Direct Blue 218
  Mouse - feed - short-term - carcinogenicity...72:19
  Rat - feed - short-term - carcinogenicity...72:19
C.I. Direct Yellow 11
  Toxicological characterization...69:15
C. I. Pigment Yellow 74
  Short-term - carcinogenicity...72:21

N, N-Dimethylformamide
  2-year - carcinogenicity...72:27
Ethylbenzene
  Toxicological characterization...69:21
Ethylenethiourea
  Mouse - feed - long-term - carcinogenicity...76:25
  Rat - feed - long-term - carcinogenicity...76:25
Furan
  Mouse - gavage - long-term - carcinogenicity...76:27
  Rat - gavage - long-term - carcinogenicity...76:27
Gentian violet
  Mouse - feed - long-term - carcinogenicity...75:21
  Rat - feed - long-term - carcinogenicity...75:21
n-Hexane
  Toxicological characterization...69:23
  Rat - inhalation - 90-day...71:33
Hydrogen sulfide
  Mouse - inhalation - 90-day...71:37
  Rat - inhalation - 90-day...71:37
Isobutyraldehyde
  Toxicological characterization...69:25
Manganese sulfate
  Mouse - short-term - carcinogenicity...72:29
  Rat - short-term - carcinogenicity...72:29
Methylphenidate
  Mouse - feed - short-term - carcinogenicity...72:33
  Rat - feed - short-term - carcinogenicity...72:33
Methyl bromide
  Toxicological characterization...70:5
Methyl chloride
  Rat - inhalation - long-term - Reproduction
    and fertility...71:31
Methyl ethyl ketone
  Rat - inhalation - 90-day...71:35
2-Mercaptobenzimidazole
  Rat - feed - short-term - carcinogenicity...73:25
  Toxicological characterization...69:27
Methdilazine
  Mouse - feed - carcinogenicity...72:31
  Rat - feed - carcinogenicity...72:31
Molybdenum trioxide
  Toxicological characterization...70:7
Monochlorobenzene
  Adult rat liver cells - carcinogenicity...75:19
Naphthalene
  Toxicological characterization...69:7
p-Nitroaniline
  Mouse - gavage - short-term - carcinogenicity...73:23
o-Nitroanisole
  Mouse - feed - short-term - carcinogenicity...73:25

- Nitrobenzene
  - Mouse - inhalation - 90-day...71:29
  - Rat - inhalation - 90-day...71:29
- Nitrotoluene (undefined mixture)
  - Carcinogenicity...73:27
- Ochratoxin A
  - Rat - gavage...69:5
- D-phenylalanine
  - Toxicological characterization...70:9
- Phosgene
  - Carcinogenicity...73:29
- Promethazine
  - Mouse - gavage - short-term - carcinogenicity...73:31
  - Rat - gavage - short-term - carcinogenicity...73:31
- Propantheline bromide
  - Mouse - feed - short-term - carcinogenicity...74:11
  - Rat - feed - short-term - carcinogenicity...74:11
- Radionuclides
  - Dog - Inhalation - carcinogenicity - mutagenicity...73:21
  - Inhalation...73:19
  - Rodents - Inhalation - carcinogenicity - mutagenicity...73:21
- Riddelline
  - Mouse - gavage - short-term - carcinogenicity...74:15
  - Rat - gavage - short-term - carcinogenicity...74:15
- Seneciphylline...74:13
- Silica
  - Rat - inhalation - short-term...71:43
- Sodium arsanilate
  - Carcinogenicity...68:31
- Sucrose
  - Toxicological characterization...70:11
- Talc
  - Toxicological characterization...70:13
- -trans-delta(9)-Tetrahydrocannabinol
  - Toxicological characterization...70:15
- Tetrahydrofuran
  - Mouse - gavage - carcinogenicity...74:17
  - Rat - gavage - carcinogenicity...74:17
- alpha-Tocopherol
  - Toxicological characterization...70:14
- Triamterene
  - Mouse - feed - carcinogenicity...74:19
  - Rat - feed - carcinogenicity...74:19
- 2,4,5-Trichlorophenol
  - Carcinogenicity...68:33
- 1,2,3-Trichloropropane
  - Mouse - gavage - carcinogenicity...74:21
  - Rat - gavage - carcinogenicity...74:21
- Tricresyl phosphate
  - Mouse - gavage - carcinogenicity...74:23
  - Rat - gavage - carcinogenicity...74:23

1,2,4-Trichlorobenzene
  Adult rat liver cells - carcinogenicity...75:15
Trimellitic anhydride
  Mouse - feed - short-term - carcinogenicity...75:13
  Rat - feed - short-term - carcinogenicity...75:13
Trimellitic anhydride
  Mouse - feed - gavage - carcinogenicity...75:13
  Rat - feed - gavage - carcinogenicity...75:13
Tungsten carbide [WC]
  Short-term - carcinogenicity...74:25
Turmeric oleoresin (curcumin)
  Mouse - feed - carcinogenicity...76:15
  Rat - feed - carcinogenicity...76:15
Vanadium pentoxide
  Toxicological characterization...70:19
C. I. Vat Blue 1
  Toxicological characterization...69:17
Vitamin E
  Toxicological characterization...70:17
Vinylidene fluoride
  Carcinogenicity...68:35
1-Vinyl-2-pyrrolidinone polymers
  Carcinogenicity...68:29
Zinc oxide
  Toxicological characterization...70:21

## Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11
50-34-0 Propantheline bromide...74:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-41-0 Dephenylhydantoin(phenytoin)...76:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
60-87-7 Promethazine...73:31
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9, 72:27
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-38-7 Vinylidene fluoride...68:35
75-44-5 Phosgene...73:29
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-06-1 Acrylamide...55:21, 55:23
79-11-8 Chloroacetic acid...57:19
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21

| | |
|---|---|
| 87-62-7 | 2,6-Xylidine...56:29, 59:13 |
| 87-86-5 | Pentachlorophenol...66:5 |
| 89-63-4 | 4-Chloro-2-nitroaniline...70:27 |
| 91-20-3 | Naphthalene...69:7 |
| 91-23-6 | o-Nitroanisole...73:25 |
| 91-64-5 | Coumarin...57:27 |
| 91-79-2 | Thenyldiamine (Pharmaceutical)...64:9 |
| 91-80-5 | Methapyrilene...64:15 |
| 91-81-6 | Tripelenamine...64:7 |
| 91-84-9 | Pyrilamine...64:11 |
| 92-48-8 | 6-Methylcoumarin...57:23 |
| 93-76-5 | 2,4,5-T...66:5 |
| 94-66-2 | Diethyl phthalate...57:31 |
| 94-75-7 | 2,4-D...66:5 |
| 95-50-1 | 1,2-Dichlorobenzene...55:31 |
| 95-86-3 | 2,4-Diaminophenol...64:25 |
| 95-95-4 | 2,4,5-Trichlorophenol...68:33 |
| 96-09-3 | Styrene oxide...65:17 |
| 96-18-4 | 1,2,3-Trichloropropane...74:21 |
| 96-45-7 | Ethylenethiourea...76:25 |
| 98-85-1 | alpha-Methylbenzyl alcohol...61:23 |
| 98-95-3 | Nitrobenzene...71:29 |
| 100-01-6 | p-Nitroaniline...73:23 |
| 100-02-7 | p-Nitrophenol...65:13 |
| 100-40-3 | 4-Vinylcyclohexene...57:9 |
| 100-41-4 | Ethylbenzene...69:21 |
| 100-42-5 | Styrene...55:27 |
| 100-44-7 | Benzyl chloride...65:5 |
| 100-52-7 | Benzaldehyde..76:19 |
| 101-90-6 | Diglycidyl resorcinol ether...63:9 |
| 101-77-9 | 4,4'-Methylenedianiline...63:13 |
| 103-90-2 | 4-Hydroxyacetanilide...57:25 |
| 104-55-2 | Cinnamaldehyde...64:27 |
| 106-46-7 | 1,4-Dichlorobenzene...55:33 |
| 106-47-8 | p-Chloroaniline...60:21 |
| 106-87-6 | 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25 |
| 106-92-3 | Allyl glycidyl ether...76:17 |
| 107-02-8 | Acrolein...59:23 |
| 107-07-3 | Ethylene chlorohydrin...58:19 |
| 107-15-3 | Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17 |
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9 |
| 109-99-9 | Tetrahydrofuran...74:17 |
| 110-00-9 | Furan...76:27 |
| 110-54-3 | Hexane...55:21, 69:23, 71:33 |
| 110-80-5 | 2-Ethoxyethanol...65:3, 66:9 |
| 111-15-9 | 2-Ethoxyethanol acetate...65:3 |
| 111-30-8 | Glutaraldehyde...57:15 |
| 111-76-2 | 2-Butoxyethanol...65:3, 66:9 |
| 111-90-0 | 2-(2-Ethoxyethoxy)ethanol...65:3 |
| 113-45-1 | Methylphenidate...72:33 |
| 115-07-1 | Propylene...58:23 |
| 115-09-3 | Methylmercuric chloride...55:23 |

| | |
|---|---|
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27 |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 (petroleum)...66:13, 66:15 |
| 119-93-7 | 3,3'Dimethylbenzidine...76:13 |
| 120-32-1 | o-Benzyl-p-chlorophenol...72:13 |
| 120-40-1 | Lauric acid dietholamine (con 1/1); (Bis(2-hydroxyethyl)lauramide)...61:21 |
| 121-19-7 | Roxarsone...59:19 |
| 121-79-9 | Propyl gallate...63:17 |
| 123-72-8 | Butyraldehyde...72:11 |
| 124-40-3 | Dimethylamine...71:27 |
| 124-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 148-65-2 | Chlorothen...72:25 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23, 69:5 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 396-01-0 | Triamterene...74:19 |
| 458-37-7 | Curcumin...76:15 |
| 480-81-9 | Seneciphylline...74:13 |
| 482-89-3 | C.I. Vat Blue 1...69:17 |
| 469-21-6 | Doxylamine...64:23 |
| 470-82-6 | 1,8-Cineole...64:29 |
| 509-14-8 | Tetranitromethane...55:15, 56:27 |
| 518-47-8 | C.I. Acid Yellow 73...58:11 |
| 542-56-3 | Isobutyl nitrite...64:17 |
| 542-75-6 | 1,3-Dichloropropene...63:7 |
| 542-78-9 | Malonaldehyde...58:17 |
| 555-30-6 | Methyldopa...67:29 |
| 569-61-9 | C.I. Basic Red 9, monohydrochloride...58:13 |
| 583-39-1 | 2-Mercaptobenzimidazole...69:27 |
| 584-84-9 | 2,4-Toluene diisocyanate...59:7 |
| 598-55-0 | Methyl carbonate...67:27 |
| 673-06-3 | D-phenylalanine...70:9 |
| 828-00-2 | Dimethoxane...61:11 |
| 868-85-9 | Dimethyl hydrogen phosphite...59:3 |
| 924-42-5 | N-Methylolacrylamide...57:21 |
| 989-38-8 | Rhodamine 6G...58:9 |
| 1271-19-8 | Titanocene dichloride...60:31 |
| 1306-19-0 | Cadmium oxide...68:21 |
| 1306-23-6 | Cadmium sulfide...68:23 |
| 1309-37-1 | Ferric oxide...62:5 |
| 1313-27-5 | Molybdenum trioxide...70:7 |
| 1314-13-2 | Zinc oxide...70:21 |
| 1314-62-1 | Vanadium pentoxide...70:19 |
| 1317-71-1 | Olivine...62:7 |
| 1325-37-7 | C.I. Direct Yellow 11...69:15 |
| 1330-20-7 | Xylene...62:11, 67:11 |
| 1330-78-5 | Tricresyl phosphate...74:23 |
| 1338-23-4 | 2-Butanone, peroxide...62:15 |

1344-00-9 Sodium aluminosilicate...56:15
1406-18-4 Vitamin E...70:17
1817-73-8 2-Bromo-4,6-dinitroaniline...69:9
1854-26-8 Dimethyloldihydroxyethyleneurea...60:19
1972-08-3 -trans-delta(9)-Tetrahydrocannabinol...70:15
1982-37-2 Methdilazine...72:31
2058-46-0 Oxytetracycline hydrochloride...57:13
2244-16-8 d-Carvone...76:21
2385-85-5 Mirex...63:15
2425-85-6 C.I. Pigment Red 3...61:15
2429-73-4 C. I. Direct Blue 2...72:17
2429-74-5 C. I. Direct Blue 15...68:27
2429-74-5 C. I. Direct Blue 15...68:25
2475-45-8 C. I. Disperse Blue 1...65:25
2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5
5989-27-5 d-Limonene...60:27
6358-31-2 C. I. Pigment Yellow 74...72:21
6459-94-5 C. I. Acid Red 114...72:15
6471-49-4 C.I. Pigment Red 23...61:13
7166-19-0 beta-Bromo-beta-nitrostyrene...69:11
7440-41-7 Beryllium...66:11
7487-94-7 Mercuric chloride...59:31
7631-86-9 Silica...62:7, 71:43
7681-49-4 Sodium fluoride...56:19
7782-50-5 Chlorine...64:3, 71:41
7783-06-4 Hydrogen sulfide...71:37
7783-81-5 Uranium-238 hexafluoride...55:9
7785-87-7 Manganese sulfate...72:29
8024-37-1 Turmeric oleoresin (cucumin)...76:15
9002-92-0 Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5
9003-39-8 1-Vinyl-2-pyrrolidinone polymers...68:29
9005-65-6 Polysorbate 80...60:15
1321-12-6 Nitrotoluene (undefined mixture)...73:27
10028-15-6 Ozone...59:25
10098-97-2 Strontium-90...56:9
10325-94-7 Cadmium nitrate...69:13
10361-37-2 Barium chloride...70:25
10599-90-3 Chloramine...72:23
12001-28-4 Crocidolite...63:27
12001-29-5 Chrysotile...63:25
12070-12-1 Tungsten carbide [WC]...74:25
12172-73-5 Amosite...63:23
12266-32-9 Plutonium-238 dioxide...61:7, 73:21
12741-11-6 Zirconium silicate...62:7
13552-44-8 4,4'-Methylenedianiline dihydrochloride...63:13
13961-86-9 Oleic acid dietholamine salt...65:15
13968-56-4 Plutonium-239 tetranitrate...61:7, 73:21

14047-09-7 3,3',4,4'-Tetrachloroazobenzene...58:3
14807-96-6 Talc...70:13
14808-60-7 Quartz...62:5
14567-73-8 Tremolite...63:19
15117-96-1 Uranium-235...55:9
16127-62-1 Amosite...63:23
16561-29-8 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21
19086-72-7 Olivine...62:7
21232-47-3 3,3',4,4'-Tetrachloroazoxybenzene...58:3
21645-51-2 Hydrated alumina (Aluminum hydroxide)...62:5
22840-34-2 Plutonium-239 dioxide...56:11, 61:7, 73:21
23246-96-0 Riddelline...74:15
28407-37-6 C. I. Direct Blue 218...72:19
26628-22-8 Sodium azide...56:31
26677-58-7 Plutonium-239 citrate...56:11
36355-01-8 Hexabromobiphenyl...64:13
52551-67-4 HC Yellow No. 4...64:5
53799-46-5 Crocidolite...63:27
58425-86-8 Aluminum silicate...62:7
61076-97-9 Chrysotile...63:25
61105-31-5 Crocidolite...63:27
64741-55-5 Light catalytic cracked naphtha...67:3, 67:5
64741-56-6 Vacuum residuum (petroleum)...67:21
64741-62-4 Catalytic cracked clarified oil (petroleum)...67:23
64741-63-5 Light catalytic reformed naphtha (petroleum)...66:25, 66:27
64741-87-3 Sweetened naphtha (petroleum)...66:17, 66:19
64742-48-9 Hydrotreated heavy naphtha (petroleum)...67:17, 67:19
64742-80-9 Hydrodesulfurized middle distillate (petroleum)...66:13, 66:15
64742-81-0 Hydrodesulfurized kerosene (petroleum)...66:21, 66:23
68334-30-5 Petroleum products, diesel oil...61:9, 73:17
68512-90-3 Diesel test fuel...73:17
68476-34-6 Fuels, diesel, No. 2...61:9, 73:17

## Supporting and Performing Organizations

American Petroleum Institute
  *Coate, W....67:7
  *Furst, A....67:25
  *Jagannath,...67:13
  *Schroeder, R.E....67:11
  *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  *Weaver, N.K....55:27
  Sponsored studies...67:23
American Health Foundation
  Williams, G. M....75:15, 75:17, 75:19
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5, 72:13, 74:23, 76:23, 76:25
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13, 76:17
Biodynamics...67:11
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory...71:43
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S.H...60:5, 60:7, 60:9, 60:11, 60:17
  Zelenak, J.P....60:9
Central Institute for Nutrition & Food...68:19
Chemical Industry Institute of Toxicology
  *Barrow, C. S....71:27, 71:41
  *Bus, J.S....71:37, 71:39
  *Drew, R. T....71:43
  *Gralla, E....55:3, 55:5, 71:33, 71:35
  Hamm, T....71:29, 71:31
  *Kutzman, R. S....71:43
  Sponsored studies...71:27, 71:29, 71:31
Chemical Manufacturers Association
  *Stack, C.R....55:27, 55:29, 55:31, 55:33, 75:15, 75:17, 75:19
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15, 72:23, 72:29, 74:17
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23, 72:15, 76:13
Coate, W. B....55:25
Hazelton Raltec Inc....72:33, 73:23, 73:25, 74:15, 74:21
Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute
73:13, 73:15, 73:17, 73:19, 73:21
Benjamin, S A....56:11
Brooks, A. L....56:11
Brownstein, D....56:11
Hahn, F.F....56:9
McClellan, R. O....61:7, 61:9, 73:13, 73:15
Muggenberg, B. A....56:9, 56:11
Snipes, M. B....56:9
International Research & Development Corp....57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17, 72:19, 74:11, 74:19, 76:21
Ulrich, C....71:41
Institute for Medical Research
Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13, 72:31, 73:31
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33, 76:15
Michigan State University
Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
Morgantown Energy Technology Center...73:13, 73:15,
National Cancer Institute
Blair, A....62:11
*Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
Miller, B....62:11
*Sestito, J....62:13
*Spirtas, R....62:13
Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19, 75:13, 75:21
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
Sponsored studies...55:21, 55:23, 58:3

*Project Officer/Compound Manager

- National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19
  - *Brown, D....55:9
  - *Boeniger, M....55:11
  - *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  - *Cox, C....60:3
  - *Donaldson, H....66:3
  - *Elliott, L....56:3, 56:7
  - *Herrick, B....60:3
  - *Honchar, P....66:5
  - Lewis, T. R....62:5
  - Nelson, B.K....65:3
  - *Reeve, G....66:7
  - *Okun, A....66:11
  - *Robinson, C....55:7
  - *Rosenberg, M....66:9
  - Stern, F. B....62:3
  - *Taylor, P....55:13
  - Wagner, W. D....62:9
  - *Whalen, J....56:5
  - *Whitmire, C....55:15
  - Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
- National Institutes of Health
  - Sponsored studies...61:3
- National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21, 72:11, 72:17, 72:25, 72:27, 73:27, 73:29, 74:13, 74:21, 74:25, 75:13, 75:21
  - *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
  - *Birnbaum, L....59:9, 72:13
  - *Boorman, G....76:17
  - *Brown, S....69:7, 70:13
  - *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15, 73:23, 73:25, 76:23, 76:25
  - *Chu, K....69:9, 70:5
  - *Creasia, D....65:5, 65:17, 65:23
  - *Dean, J....60:17, 65:11
  - *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
  - *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
  - *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23, 74:11
  - *Eastin, W....69:5, 69:5, 69:15, 72:21
  - *Goldman, D....70:15, 72:31, 74:15
  - *Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29, 76:15
  - *Gupta, B....59:5, 70:25, 74:17
  - *Hartwell, W....58:5, 59:19, 59:21, 60:21
  - *Huff, J....63:15, 64:33
  - *Irwin, R....59:29, 64:25, 65:13, 69:19, 74:23, 76:27

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

*Jackson, C....64:17
*Jameson, C. W....55:17, 60:27, 63:3
*Kluwe, W. M....57:5, 65:9, 72:33, 76:19
*Lamb, J. C....57:29, 63:13
*Luster, M....73:31
*Matthews, H....59:11, 59:27, 65:21
*McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
*McCoy, J.L....60:19, 69:25, 70:23, 70:27, 76:21
*Melnick, R....56:21, 59:17, 63:11
*Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17, 72:15, 72:19, 76:13
*Moorman, W....70:21
*Niemeier, R....70:19
*Padarathsingh, M....62:19
*Plotnick, H....69:21
*Powers, M....56:23, 57:3, 57:9, 57:15, 57:21 59:15, 62:23, 64:5, 64:19
*Quest, J....67:27, 69:27, 70:7
*Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
*Van Stee, E....60:13
*Walters, D....72:29
*Ward, J.M....58:17, 58:19, 58:21, 61:11
*Weber, H....69:11
*Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11, 72:23, 74:19
Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25, 76:19, 76:27
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
Cavender, F....55:3, 55:5, 71:33, 71:35
Morgan, J. M....71:37, 71:39
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29, 72:23

*Project Officer/Compound Manager

Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

# NICKEL IN THE HUMAN ENVIRONMENT

LYON, 8 - 11 March 1983

The symposium will take place at the

INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

and is jointly organized with the

INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY,
WORLD HEALTH ORGANIZATION

INTERNATIONAL LABOUR ORGANIZATION

COMMISSION OF THE EUROPEAN COMMUNITIES

- Directorate-General for Science, Research and Development, Brussels
- Health and Safety Directorate, Luxembourg

FRENCH MINISTRY OF THE ENVIRONMENT

**The participating organizations are all concerned about possible hazards associated with chronic exposure to nickel and its compounds, and the symposium will aim to contribute to an up-to-date evaluation of the known biological effects of nickel.**

**Participants from scientific institutions and industry, covering clinical and experimental disciplines, and especially epidemiology have been invited.**

**It is hoped that, by discussion between all those involved, the symposium will assist in the definition of the problem and reinforce protective action at the national and international level within the competence of each of the sponsoring organizations.**

The proceedings will be conducted in English and French with simultaneous translation facilities, and will subsequently be published both in French and English.

Individuals and organizations wishing to be represented should write to the organizing secretary Dr W. Davis, IARC, 150 cours Albert Thomas, 69372 Lyon Cedex 08, France.

A limited number of proffered papers can be included in the appropriate sessions.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No:**
**and/or**
**Control No:**

**PROJECT TITLE:**

**INVESTIGATOR(S):**

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

**PERFORMING ORGANIZATION:**

Name and Address.
Including Zip Code.

**PERIOD FOR THIS NRP:**

**Start Date:**

**End Date:**

**Annual Funding:**

**PROJECT SUMMARY:**

*Before completing this form, please see reverse side for instructions.*

## INSTRUCTIONS FOR FILLING IN THE FORM

**Supporting Organization**

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

**Project Title**

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

**Investigator(s)**

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

**Performing Organization**

Enter name of organization where work is actually being done.

**Start Date, End Date and Annual Funding**

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

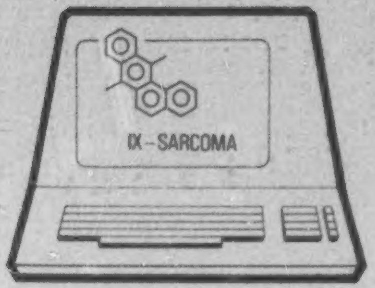
**Project Summary**

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

**Send All Notices of Research Projects Directly To:**

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# TDB
## TOXICOLOGY DATA BANK
# CONDENSED

---

Bethesda, Maryland 20209

---

**TDB DEFINED**

The Toxicology Data Bank (TDB) is an online, interactive file containing chemical, pharmacological, and toxicological data extracted from textbooks, handbooks, criteria documents, and monographs. The file is created by the Specialized Information Services (SIS) in collaboration with Oak Ridge National Laboratory (ORNL). It is made available through the National Library of Medicine's online service, the Medical Literature Analysis and Retrieval System (MEDLARS). TDB contains data and information on about 3000 compounds. Data in TDB have been reviewed by a peer group of scientists.

Information in TDB is organized around each chemical substance with records composed of approximately 60 different data elements. The elements are grouped into eight categories which include chemical, physical, biological, pharmacological, toxicological, and environmental information.

**TDB ACCESSED**

TDB is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone lines or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

**TDB SEARCHED**

TDB is primarily searched using free text terms. The human and animal/non-human toxicity excerpts have been indexed with TOXMeSH vocabulary. The user can search TDB for a particular chemical record by entering the TDB number, CAS Registry Number, or a substance name. The user can also search TDB for information on a group of compounds, or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected information reported for a given substance.

**TDB AVAILABILITY**

TDB is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 9:00 P.M. (Eastern Time).

**TDB COST**

The cost of access to the TDB file is $22 per hour during prime time (10:00 a.m. to 5:00 p.m.), and $15 per hour at non-prime times. There is a charge of $0.15 per page for offline printout.

**TDB USER SERVICES**

For Online Systems services including access to the TDB file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For TDB content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–1131

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

77

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

PB82-915010
NUMBER 77
OCTOBER 1982

NEWARK PUBLIC LIBRARY
MAR 31 1983
U. S. GOVT. PUBS.
DEPOSITORY 376

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## Table of Contents

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
13 Carcinogenesis Bioassay of Furfural
15 Carcinogenesis Bioassay of Quercetin
17 Tests for Toxicologic and Carcinogenic Effects: Status of Azodicarbonamide
19 Tests for Toxicologic and Carcinogenic Effects: Status of (-)-Beta-Cadinene
21 Tests for Toxicologic and Carcinogenic Effects: Status of Chlorpromazine Hydrochloride
23 Tests for Toxicologic and Carcinogenic Effects: Status of Bromobenzene
25 Tests for Toxicologic and Carcinogenic Effects: Status of Diethyl Phthlate
27 Tests for Toxicologic and Carcinogenic Effects: Status of 4,4'-Diphenylmethane Diisocyanate
29 Tests for Toxicologic and Carcinogenic Effects: Status of Ethylenediamine
31 Tests for Toxicologic and Carcinogenic Effects: Status of Formaldehyde
33 Tests for Toxicologic and Carcinogenic Effects: Status of Furfuryl Alcohol
35 INDEX OF COMPOUNDS
36 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
41 SUPPORTING AND PERFORMING ORGANIZATIONS
46 ANNOTATED BIBLIOGRAPHIES ON CURRENT TOPICS IN TOXICOLOGY
47 NOTICE OF RESEARCH PROJECT BLANK FORM
51 CHEMLINE CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20. 3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:
North American Continent addresses $45
All others $90
Bulk rates available on request from NTIS

## FROM THE EDITOR

We invite your participation in this project. Pages on which to submit project descriptions for publication in TOX-TIPS are included at the back of each issue. The reverse of each form lists the instructions to complete the page. Prior issues of the publication can serve as a guide to the nature and extent of the information needed.

The goals of this project are to prevent duplication of studies, and to inform readers of the development of new test methods. Your contributions to this publication will enhance its utility to all readers.

If you have any questions concerning this project, or others sponsored by our division, please call me at 301-496-1131 for further information.

Carol B. Haberman

EDITOR, TOX-TIPS

# TOXICOLOGY INFORMATION RESPONSE CENTER
# (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program/National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

## JOURNAL LITERATURE

Aplin, J.D., and Hughes, R.C. Cell adhesion on model substrata: threshold effects and receptor modulation. *J Cell Sci, 50,* 89-103, 1981.

Cells adsorbed to glass require a threshold concentration of glass-immobilized protein if they are to present a well-spread morphology. For some tests of toxic effects of substances on cells, adsorption can be an important factor. This article proposes a model of the events leading to a well-spread morphology.

Sliwinska-Przyjemska, H. and Pilawska, H. Evaluation of liver cell efficiency, based on selected laboratory tests. *Med Pr, 32,* 197-94, 1981.

Knox, P., Ingarfield, S.L. and Pflug, J.J. The effect of human peripheral lymph on cell growth *in vitro. Biosci Rep, 1,* 963-70, 1981.

Peripheral lymph from adult humans promotes the growth of cells in culture more efficiently than human plasma. The low density lipoproteins present in plasma may be filtered out by the capillary endothelium. Such factors may be of importance in evaluating the effects of various chemicals upon cell growth in culture and especially in comparing the results from different laboratories.

Chessebeuf, M., et al. Combination of quadropolar computerized gas chromatography-mass spectrometry techniques and cell culture systems from rodent and human liver for drug metabolism and pharmacology. *Anal Chem Symp Ser; Iss 7, Recent Dev Mass Spectrom Biochem Med Environ Res,* 123-45, 1981.

This report demonstrates the use of epithelial liver cell culture for toxicological as well as pharmacological and metabolic studies on drugs. The necessary conditions for culturing rat and liver cells are described. Results from a study on fenofibrate are also given.

Swaiman, K.F., et al. A method for large-scale production of mouse brain cortical cultures. *Brain Res, 255,* 361-9, 1982.

> Cultures of fetal brain tissue are of importance in tests of neurotoxicity of chemicals. Large numbers of very similar cultures for studies of toxicity and mechanism of action of neuroactive compounds can be established. The presence of neural tissue can be documented both by light microscopy and by studies of ultrastructure. The similarity of cultures can be satisfactorily demonstrated by comparison of cell counts, protein concentrations, and levels of activity of choline acetyltransferase.

Hoegberg, J., et al. Drug actions in cell culture: the metabolism of toxic substances in isolated hepatocytes. *Adv Pharmacol Ther Proc Int Congr 8th, 3,* 141-9, 1982.

> A review of the metabolism of selenite and of $CHCl_3$ in isolated hepatocytes. The discussion deals with the effects of these compounds on GSH turnover. Twenty-six references are included.

Conference on the ferret as an alternative species in teratology and toxicology, June 25-26, 1981, Stanford, California. *Teratology, 24,* P1A-18A, 1981.

Korhonen, A., Hemminki, K. and Vainio, H. Application of the chicken embryo in testing for embryotoxicity: thiurams. *Scand J Work Environ Health, 8,* 63-8, 1982.

> This paper presents a protocol for testing toxicity of chemicals using chicken embryos. The injection was made on day three and the embryos continuously monitored until day 14 to detect deaths before maceration occurred. Dead embryos frequently showed multiple malformations. "The following parameters of embryotoxicity were used: early deaths (spanning the first 2 days after injection),

late deaths with malformed embryos, late deaths with nonmalformed embryos, and malformed survivors." Of the thiurams, tetramethylthiuram disulfite was the most embryotoxic and tetramethylthiuram disulfide the least.

Feldman, R.G., Ricks, N.L. and Baker, E.L. Neuropsychological effects of industrial toxins: a review. *Am J Industr Med, 1,* 211-27, 1980.

Nervous system function must be quantitatively measured to evaluate the extent and nature of injury following exposure to neurotoxic agents. This review deals especially with the application of such tests in an industrial setting and the factors which affect the use of such tests. Standardized testing has appreciably increased our understanding of the effects of neurotoxins. Both the clinical experience of the authors and the pertinent medical literature contribute to the discussion. The specific effects of lead, carbon disulfide, trichloroethylene, perchloroethylene, mercury, styrene and pesticides are described in detail.

Stebbins, W.C. Concerning the need for more sophisticated animal models in sensory behavioral toxicology. *Environ Health Perspect, 44,* 77-85, 1982.

Not only are laboratory animal models for screening the effects of toxic substances upon sensory behavior necessary but also "...more thorough and quantitative tests..." are required. Such tests are necessary to mirror the complexity of day-to-day life in terms of environmental conditions and demands. It can be expected that a greater complexity of stimulus conditions and behavioral response will more accurately reflect the condition of the central nervous system processes involved. Acoustic tests and the responses in the guinea pig and the monkey are described in this article. Such techniques, the author feels, could easily be modified to measure even more sophisticated behaviors such as sound localization.

Thomas, W.G. Clinical assessment of auditory dysfunction. *Environ Health Perspect, 44*, 67-75, 1982.

> Many toxic substances have deleterious effects on the auditory system. In general these are high frequency hearing loss which is progressive as a function of frequency. This deficit may be accompanied by tinnitis and occasionally by vertigo. A combination of classical and new audiological tests such as are used in clinical assessment of hearing are useful in specifying the site of the lesion in the cochlea although giving little information on pathology or etiology.

Shinkman, P.G., Isley, M.R. and Rogers, D.C. Newer laboratory approaches for assessing visual dysfunction. *Environ Health Perspect, 44*, 55-62, 1981.

> The use of analyses of the visual cortical receptive field (RF) at the single cell level has great possibilities as a screening tool for neurotoxicity. Since the demonstration that exposure of kittens during the critical period to "...altered visual environments..." can be selective in its effect upon particular classes of RF's, many new methods to measure this phenomenon have been proposed. The current trend is toward a multidisciplinary combination of approaches. The techniques reviewed in this paper are adaptable to studying neurotoxic effects in the monkey or the cat. "In fact some toxicants might produce a general degradation of RF properties akin to the electrophysiological results reported for long-term dark rearing or binocular deprivation."

---

---

## ENVIRONMENTAL PROTECTION AGENCY PROJECT SUMMARIES

Available from the National Technical Information Service, Springfield, VA 22161 Telephone 703-487-4650.

Russell, L.B. et al. Evaluation of mutagenic effects of diesel emmissions. I. Tests for heritable and germ-cell effects in the mouse. EPA-600/S1-81-056, Sept 1981. NTIS Order No. PB81-235 814.

> This project considers six subprojects: 1) Test for heritable point mutations in male mice; 2) Test for induction of dominant lethals in male mice; 3) Test for induction of heritable translocations in male mice; 4) Test for induction of genetic effects and oocyte killing in females; 5) Test for dominant lethal induction in female mice; 6) Test for effects of spermatogonial survival in the mouse.

Edgerton, T.R., Moseman, R.F. and Wright, L.H. Method development for the assessment of possible human exposure to pesticides and industrial chemicals. EPA-600/S1-81-024, Apr 1981. NTIS Order No. PB81-175 796.

Herman. Z.S. et al. Chronic toxicity of lead and cadmium: II. Changes in the central nervous system of F1 generation of rats after chronic intoxication with lead and cadmium. EPA-600/S1-81-013, Mar 1981. NTIS Order No. PB81-150 989

Massaro, E.J. et al. Sensitive biochemical and behavioral indicators of trace substance exposure: Part 1. Cerium. EPA-600/S1-81-011, Mar 1981. NTIS Order No. PB81-150 765.

---

## GOVERNMENT REPORTS

Wolthuis, O.L. and Van Raalte, H.G.S. Behavioral toxicology: Experimental Methods and results in man. *Govt Reports Announcements & Index (GRA&I)*, Issue 14, 1982, NTIS Order No. PB82-181389.

Behavioral test methods may be used to detect defects in the brain, and epidemiological studies may make use of such methods to good advantage. This report contains comments, a brief summary, and in some cases, a conclusion following each section. An overall conclusion is reached that such tests are sensitive indicators of CNS toxicology and "...may detect impairment in otherwise asymptomatic workers." The most efficient tests appear to be those which "...measure integration of functions." "Simple and choice reaction time, psychomotor and sensorimotor tasks, the Santa Anna dexterity test, and visual short-term memory tests are possible choices." Tests such as these are not specific for the compound to which the subject may have been exposed.

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
Contract No: and/or Control No: NTP No. 10120-F
NCI No. C56177

**PROJECT TITLE:**
Carcinogenesis Bioassay of Furfural

**INVESTIGATOR(S):**
Dr. R. Irwin

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
Name and Address. Including Zip Code.
Southern Research Institute
Birmingham, AL 35205

**PERIOD FOR THIS NRP:**
Start Date: November 1978
End Date:
Annual Funding:

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, furfural is being administered to rats and mice by gavage. Chronic testing began during March 1982.

CAS Registry No.
Furfural 98-01-0

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Becauso these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Cakrtova E ; Flek J
Evaluation of furfural exposure level with biological exposure tests
Prac. Lek.; VOL 33, ISS 9, 1981,316-18

FERON VJ ; KRUYSSE A ; DREEF-VAN DER MEULEN HC
Repeated exposure to furfural vapor: 13-week study in Syrian golden hamsters (Mesocricetus auratus).
ZENTRALBL BAKTERIOL PARASITENKD INFEKTIONSKR HYG ERSTE ABT ORIG REIHE B HYG KRANKENHAUSHYG BETRIEBSHYG PRAEV MED; 168 (5-6). 1979. 442-451.

Bong M ; Laskowska-Klita T ; Skalska-Hilgier E ; Szymczyk T
Tyrosine aminotransferase activity in the liver, kidney and blood serum of rats poisoned with furfural
Bromatol. Chem. Toksykol.; VOL 12, ISS 3, 1979,247-52

Vilisov BA ; Irger NS ; Kremko LM ; Pavlyutina ZN ; Tseluiko IG
Danishevich YS ; Khudnitskii SS
Hygienic evaluation of some synthetic resins and their effect on the health of molding department workers
Zdravookhr. Beloruss.; ISS 1, 1980,31-4

Lauwerys R ; Buchet JP ; Roels H
Biological methods for surveillance of workers exposed to various industrial toxic substances
Cah. Med. Trav.; VOL 17, ISS 2, 1980,91-7

Bily-Pantucek M ; Novotny S ; Hynkova Z ; Jergeova Z
Use of furfural in the foundry from the standpoint of industrial medicine
Prac. Lek.; VOL 33, ISS 4, 1981,132-4

LOQUET C ; TOUSSAINT G ; LETALAER JY
STUDIES ON MUTAGENIC CONSTITUENTS OF APPLE BRANDY AND VARIOUS ALCOHOLIC BEVERAGES COLLECTED IN WESTERN FRANCE, A HIGH INCIDENCE AREA FOR ESOPHAGEAL CANCER
MUTAT RES; 88:155-164,1981

Stich HF ; Rosin MP ; Wu CH ; Powrie WD
Clastogenicity of furans found in food.
Cancer Lett; VOL 13, ISS 2, 1981, P89-95

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

**SUPPORTING ORGANIZATION:**

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No: and/or Control No:** NTP No. 10161-R
NCI No. C60106

**PROJECT TITLE:**

Carcinogenesis Bioassay of Quercetin

**INVESTIGATOR(S):**

Dr. J. L. McCoy

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**

**Name and Address. Including Zip Code.**
Mason Research Institute
Worcester, MA 01608

**PERIOD FOR THIS NRP:**

**Start Date:**

**End Date:**

**Annual Funding:**

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, quercetin, used in dyes, is being administered to rats via the feed. Chronic testing began during June 1982.

CAS Registry No.
Quercetin 117-39-5

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Kawachi T ; Matsukura N ; Sugimura T
CARCINOGENICITY TEST OF QUERCETIN
Toxicology Research Projects Directory, Vol.05 iss.08 1980

KIMURA S ; SUMA J ; ITO M ; SATO H
EXPERIMENTAL STUDIES ON THE ROLE OF DEFATTED SOYBEAN IN THE
DEVELOPMENT OF MALIGNANT GOITER, IN: NATURALLY OCCURRING
CARCINOGENS-MUTAGENS AND MODULATORS OF CARCINOGENESIS
PROC INT SYMP PRINCESS TAKAMATSU CANCER RES FUND; 9:101-110,1979

NATORI S
MUTAGENS AND CARCINOGENS OCCURRING ORIGINALLY IN NATURE
GAN TO KAGAKU RYOHO(CANCER CHEMOTHER); 6:101-112,1979

WANG CY ; KLEMENCIC JM
MUTAGENICITY AND CARCINOGENICITY OF POLYHYDRIC PHENOLS
PROC AM ASSOC CANCER RES; 20:117,1979

Pamukcu AM ; Yal,ciner S ; Hatcher JF ; Bryan GT
Quercetin, a rat intestinal and bladder carcinogen present in
bracken fern (Pteridium aquilinum).
Cancer Res; VOL 40, ISS 10, 1980, P3468-72

Fukuoka M ; Yoshihira K ; Natori S ; Sakamoto K ; Iwahara S
Hosaka S ; Hirono I
Characterization of mutagenic principles and carcinogenicity of
dill weed and seeds.
J Pharmacobiodyn; VOL 3, ISS 5, 1980, P236-44

Pamukcu AM ; Wang CY ; Hatcher J ; Bryan GT
Carcinogenicity of tannin and tannin-free extracts of bracken
fern (Pteridium aquilinum) in rats.
JNCI; VOL 65, ISS 1, 1980, P131-6

HOSAKA S ; HIRONO I
CARCINOGENICITY TEST OF QUERCETIN BY PULMONARY ADENOMA BIOASSAY
IN STRAIN A MICE
GANN; 72 (2). 1981. 327-328.

NAGAD M ; MORITA N ; YAHAGI T ; SHIMIZU M ; KUROYANAGI M
FUKUOKA M ; YOSHIHIRA K ; MATORI S ; FUJINO T ; SUGIMURA T
Mutagenicities of 61 flavonoids and 11 related compounds.
ENVIRON MUTAGEN; 3 (4). 1981. 401-420.

Jones E ; Hughes RE
Quercetin, flavonoids and the life-span of mice
Exp. Gerontol.; VOL 17, ISS 3, 1982,213-17

WILLHITE CC
TERATOGENIC POTENTIAL OF QUERCETIN IN THE RAT
FOOD CHEM TOXICOL; 20:75-77,1982

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10086-W
NCI No. C55981B

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Azodicarbonamide

INVESTIGATOR(S):

For further information, contact

Dr. L. Birnbaum

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for the chronic bioassay have been cancelled as of May 1982 because an effective exposure level cannot be generated. The chemical is used in rubber.

CAS Registry No.
Azodicarbonamide 123-77-3

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Jarcho M ; Salsbury R
Whitlockite ceramic
Ger. Offen. PATENT NO. 2855368 07/05/79 (Sterling Drug, Inc.)

Matsumoto M
Fumigant insecticide composition
Jpn. Kokai Tokkyo Koho PATENT NO. 79147928 11/19/79

OSER BL ; OSER M ; MORGAREIDGE K ; STERNBERG SS
STUDIES OF THE SAFETY OF AZODICARBONAMIDE AS A FLOUR-MATURING AGENT
TOXICOL APPL PHARMACOL; 7:445-472,1965

Slovak AJ
Occupational asthma caused by a plastics blowing agent, azodicarbonamide.
Thorax; VOL 36, ISS 12, 1981, P906-9

Fumigant pesticide composition containing foaming agents
Jpn. Kokai Tokkyo Koho PATENT NO. 81 77202 06/25/81 (Earth Chemical Co., Ltd.)

Fuel composition for fumigant pesticides
Jpn. Kokai Tokkyo Koho PATENT NO. 81 75402 06/22/81 (Honno, Akiro)

Pyridaphenthion fumigant composition
Jpn. Kokai Tokkyo Koho PATENT NO. 81 12302 02/06/81 (Mitsui Toatsu Chemicals, Inc.)

Matsumoto M
Fumigant pesticide composition
Jpn. Kokai Tokkyo Koho PATENT NO. 79145217 11/13/79

Scholl EW ; Reeh D ; Wiemann W ; Faber M ; Kuehnen G ; Beck H
Glienke N
Combustion and explosion parameters of dusts
STF-Rep.; ISS 2, 1979,99 pp.

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No and/or Control No: NTP No. 10091-J
NCI No. C56008

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of (-)-Beta-Cadinene

INVESTIGATOR(S):
For further information, contact

Dr. M. Powers

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for chronic testing of (-)-beta-cadinene, used in foods, have been cancelled as of January 1982. Minimal subchronic effects were demonstrated.

CAS Registry No.
(-)-beta-Cadinene 523-47-7

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Wenninger JA ; Yates RL
High resolution infrared spectra of some naturally occurring sesquiterpene hydrocarbons. II. Second series
J. Assoc. Offic. Anal. Chemists; VOL 53, ISS Sep 1970, P949-963; (REF:26)

Karryev M
Chemical and medicobiological study of essential oil of Juniperus turcomanico (Turkmen juniper)
Mezhdunar. Kongr. Efirnym Maslam, [Mater.], 4th; VOL 1.,, 1971,135-8

Baslas RK
Essential oil from the plants of Artemisia pallens L. (davana oil)
Flavour Ind.; VOL 2, ISS Jun 1971, P370-372; (REF:3)

Dayal B ; Purohit RM
Chemical examination of the essential oil from the seeds of Majorna hortensis Moench
Flavour Ind.; VOL 2, ISS Aug 1971, P477-480; (REF:10)

Narasimha Rao BGV ; Nigam SS
Chemical examination of the essential oil from Eugenia jambos Linn.
Perfum. Essent. Oil Rec.; VOL 60, ISS Jul/Aug 1969, P282-286

Razdan TK ; Koul GL
Studies on the Indian essential oil of Skimmia laureola Siebold and Zuccarini. II
Riv. Ital. Essenze, Profumi, Piante Off., Aromat., Syndets, Saponi, Cosmet., Aerosols; VOL 60, ISS 5, 1978,319-23

Kasano M ; Matsubara Y
High-boiling constituents of China gum terpentine
Yukagaku; VOL 27, ISS 8, 1978,530-3

Baslas RK ; Baslas KK
Essential oils from some exotic plants raised in Kumaon. Part III. Mentha arvensis. Part IV. Citronella Java type
Perfum. Essent. Oil Rec.; VOL 60, ISS Nov-Dec 1969, P337-344; (REF:12)

Higazy SA ; Abdel Akher MA O ; El-Wakeil FA ; Loutfy MK
Constitution of olibanum resinoid extracted by benzene from Arabic olibanum gum
Egypt. J. Food Sci.; VOL 1, ISS 2, 1973,203-14

Yeh P
Essential oils. XV. Essential oil of Malabar lemongrass roots
Hua Hsueh; ISS 3, 1973,88-93

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10101-T
NCI No. C05210

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Chlorpromazine Hydrochloride

INVESTIGATOR(S):
For further information, contact

Dr. J. C. Lamb

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for testing of chlorpromazine hydrochloride, a drug, have been cancelled because the Food and Drug Administration has adequate test data.

CAS Registry No.
Chlorpromazine hydrochloride 69-09-0

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Shenoy MA ; Singh BB
Cytotoxic and radiosensitizing effects of chlorpromazine hydrochloride in sarcoma 180A
Indian J. Exp. Biol.; VOL 18, ISS 8, 1980,791-5

George KC ; Srinivasan VT ; Singh BB
Cytotoxic effect of chlorpromazine and its interaction with radiation on a mouse fibrosarcoma
Int. J. Radiat. Biol. Relat. Stud. Phys., Chem. Med.; VOL 38, ISS 6, 1980,661-5

Evarts RP ; Brown CA ; Weisburger EK ; Cockrell B
ENDOGENOUS AND EXOGENOUS FACTORS IN CHEMICAL CARCINOGENESIS
Toxicology Research Projects Directory, Vol.06 iss.04 1981

Gylys JA ; Doran KM ; Buyniski JP
Antagonism of cisplatin induced emesis in the dog
Res. Commun. Chem. Pathol. Pharmacol.; VOL 23, ISS 1, 1979,61-8

Lamb JC
CARCINOGENESIS BIOASSAY OF CHLORPROMAZINE HYDROCHLORIDE
Toxicology Research Projects Directory, Vol.06 iss.08 1981

KAWACHI T ; YAHAGI T ; KADA T ; TAZIMA Y ; ISHIDATE M ; SASAKI M SUGIYAMA T
COOPERATIVE PROGRAM ON SHORT-TERM ASSAYS FOR CARCINOGENICITY IN JAPAN
IARC(INT AGENCY RES CANCER)SCI PUBL; 27:323-330,1980

KUBINSKI H ; GUTZKE GE ; KUBINSKI ZO
DNA-CELL-BINDING (DCB) ASSAY FOR SUSPECTED CARCINOGENS AND MUTAGENS
MUTAT RES; 89:95-136,1981

Stitzer ML ; Griffiths RR ; Bigelow GE ; Liebson I
Human social conversation: effects of ethanol, secobarbital and chlorpromazine
Pharmacol., Biochem. Behav.; VOL 14, ISS 3, 1981,353-60

Catravas JD ; Waters IW
Acute cocaine intoxication in the conscious dog: studies on the mechanism of lethality
J. Pharmacol. Exp. Ther.; VOL 217, ISS 2, 1981,350-6

Eroglu L ; Hizal A ; Koyuncuoglu H
The effect of long-term concurrent administration of chlorpromazine and lithium on the striatal and frontal cortical dopamine metabolism in rats
Psychopharmacology (Berlin); VOL 73, ISS 1, 1981,84-6

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NTP No. 10060-G
NCI No. 108-86-1

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Bromobenzene

INVESTIGATOR(S):

For further information, contact

Dr. W. M. Kluwe

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for the chronic testing of bromobenzene have been cancelled as of January 1, 1982, because of inadequate subchronic studies. (See also TOX-TIPS, 46-15.)

CAS Registry No.
Bromobenzene 108-86-1

TOX-TIPS OCTOBER 1982 77-23

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

PIENTA RJ
TRANSFORMATION OF SYRIAN HAMSTER EMBRYO CELLS BY DIVERSE CHEMICALS AND CORRELATION WITH THEIR REPORTED CARCINOGENIC AND MUTAGENIC ACTIVITIES
CHEM MUTAGENS:PRIN METHODS THEIR DETECTION; 6:175-202,1980

ROSENKRANZ HS ; LEIFER Z
DETERMINING THE DNA-MODIFYING ACTIVITY OF CHEMICALS USING DNA POLYMERASE-DEFICIENT ESCHERICHIA COLI
CHEM MUTAGENS:PRIN METHODS THEIR DETECTION; 6:109-147,1980

Takabatake E ; Fujita M ; Sawa Y
Combined effects of polychlorinated biphenyls and methylmercury on hepatic microsomal monooxygenases and the hepatotoxic action of bromobenzene.
J Pharmacobiodyn; VOL 3, ISS 9, 1980, P463-9

Orme T
CARCINOGENESIS BIOASSAY OF BROMOBENZENE
Toxicology Research Projects Directory, Vol.05 iss.09 1980

AMLACHER E ; ZIEBARTH D
EFFECTIVENESS IN THE CARCINOGENICITY PRESCREENING. PARTIAL COMPARISON OF THE BACTERIAL MUTAGENICITY TEST (AMES), THE THYMIDINE INCORPORATION INHIBITING SCREENING SYSTEM (AMLACHER) AND THE PROMOTING ACTIVITY TEST (DANZ)
ARCH GESCHWULSTFORSCH; 49:490-494,1979

DANZ M ; URBAN H
CARCINOGENS, PROMOTORS AND SUSPICIOUS DRUGS: THEIR IDENTICAL SHORT-TERM EFFECT IN A PROMOTING ACTIVITY TEST (PAT)
EXP PATHOL; 17:181-184,1979

FISHBEIN L
POTENTIAL HALOGENATED INDUSTRIAL CARCINOGENIC AND MUTAGENIC CHEMICALS. 4.HALOGENATED ARYL DERIVATIVES
SCI TOTAL ENVIRON; 11:259-278,1979

Danni O ; Brossa O ; Burdino E ; Milillo P ; Ugazio G
Toxicity of halogenated hydrocarbons in pretreated rats - an experimental model for the study of integrated permissible limits of environmental poisons
Int. Arch. Occup. Environ. Health; VOL 49, ISS 2, 1981,165-76

Siegers CP
Antihepatotoxic activity of (+)-cyanidanol-3 in acute and chronic experimental liver injury
Int. Congr. Symp. Ser. - R. Soc. Med.; VOL 47,, 1981,19-20

Lamb RG ; Schwertz DW
The effects of bromobenzene and carbon tetrachloride exposure in vitro on the phospholipase C activity of rat liver cells.
Toxicol Appl Pharmacol; VOL 63, ISS 2, 1982, P216-29

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NTP No. 10112-F
NCI No. C60048

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Diethyl Phthalate

INVESTIGATOR(S):

For further information, contact

Dr. W. M. Kluwe

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for the chronic testing of diethyl phthalate have been cancelled, as of February 1982, because adequate class data already exists. (See also TOX-TIPS 57-31.)

CAS Registry No.
Diethyl phthalate 84-66-2

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

OISHI S ; HIRAGA K
TESTICULAR ATROPHY INDUCED BY PHTHALIC-ACID ESTERS
53RD GENERAL MEETING OF THE JAPANESE PHARMACOLOGICAL SOCIETY, GIFU, JAPAN, MARCH 26-29, 1980. JPN J PHARMACOL; 30 (SUPPL.). 1980 (RECD. 1981). 239P.

TIMOFIEVSKAYA LA ; IVANOVA NI ; BALYNINA ES
Toxicology of esters of O-phthalic acid and hygienic standards for them.
GIG TR PROF ZABOL; 0 (3). 1980. 28-29.

ISHIDATE M ; ODASHIMA S
CHROMOSOME TESTS WITH 134 COMPOUNDS ON CHINESE HAMSTER CELLS IN VITRO: A SCREENING FOR CHEMICAL CARCINOGENS
MUTAT RES; 48:337-354,1977

Whitmire CE
CARCINOGENESIS BIOASSAY OF DIETHYL PHTHALATE
Toxicology Research Projects Directory, Vol.06 iss.08 1981

Kawano M
Toxicological studies on phthalate esters. II. Metabolism, accumulation and excretion of phthalate esters in rats.
Nippon Eiseigaku Zasshi (Jpn. J. Hyg.) 35(4): 693-701 1980 (42 References)

LAGENTE M ; DE LA FARGE F ; VALDIGUIE P
The influence of phthalate esters on human plasma lecithin/cholesterol acyltransferase.
LIPIDS; 14 (6). 1979. 533-534.

LAWRENCE WH
PHTHALATE ESTERS THE QUESTION OF SAFETY
WINEK, CHARLES L. AND SYDNEY P. SHANOR (ED.). TOXICOLOGY ANNUAL, VOL. 3. XII+340P. ILLUS. MARCEL DEKKER, INC.: NEW YORK, N.Y., USA; BASEL, SWITZERLAND. ISBN 0-8247-6773-X.; 1979 89-139

FLORIN I ; RUTBERG L ; CURVALL M ; ENZELL CR
SCREENING OF TOBACCO SMOKE CONSTITUENTS FOR MUTAGENICITY USING THE AMES' TEST
TOXICOLOGY; 15:219-232,1980

FOSTER PMD ; THOMAS LV ; COOK MW ; GANGOLLI SD
STUDY OF THE TESTICULAR EFFECTS AND CHANGES IN ZINC EXCRETION PRODUCED BY SOME N-ALKYL PHTHALATES IN THE RAT
TOXICOL APPL PHARMACOL; 54:392-398,1980

Walsh GE ; Bahner LH ; Horning WB
Toxicity of textile mill effluents to freshwater and estuarine algae, crustaceans and fishes.
Environ. Pollut. Ser. A. 21: 169-179 1980 (8 References)

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
Contract No: and/or Control No: NTP No. 10488-A
NCI No. C50668

**PROJECT TITLE:**
Tests for Toxicologic and Carcinogenic Effects: Status of 4,4'-Diphenylmethane Diisocyanate

**INVESTIGATOR(S):**
For further information, contact

Dr. J. C. Lamb

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
Name and Address. Including Zip Code.

**PERIOD FOR THIS NRP:**
Start Date:
End Date:
Annual Funding:

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for further testing of 4,4'-diphenylmethane diisocyanate have been cancelled as of February 1982. Rationale for termination is based upon difficulty in dose preparation and inadequate subchronic studies. (See also TOX-TIPS, 52-33.)

CAS Registry No.
4,4'-Diphenylmethane diisocyanate 101-68-8

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Nava C ; Briatico-Vangosa G
[Isocyanate pathology: immunological diagnostic methods (author's transl)]
Med Lav; VOL 71, ISS 4, 1980, P305-11

Tanaka K
Contact sensitivity in mice induced by tolylene diisocyanate (TDI).
J Dermatol (Tokyo); VOL 7, ISS 4, 1980, P277-80

Lid'en C
Allergic contact dermatitis from 4,4'diisocyanatol-diphenyl methane (MDI) in a molder.
Contact Dermatitis; VOL 6, ISS 4, 1980, P301-2

Zeiss CR ; Kanellakes TM ; Bellone JD ; Levitz D ; Pruzansky JJ
Patterson R
Immunoglobulin E-mediated asthma and hypersensitivity pneumonitis with precipitating anti-hapten antibodies due to diphenylmethane diisocyanate (MDI) exposure.
J Allergy Clin Immunol; VOL 65, ISS 5, 1980, P347-52

ULRICH L ; MALIK E ; HURBANKOVA M
Contribution to the pathogenesis of asthma-like reaction provoked by diisocyanates.
PRAC LEK; 32 (8). 1980 (RECD. 1981). 253-257.

Diller WF ; Herbert E
[Lung function and other health parameters in employees of an isocyananide plant (MDI production)]
Zentralbl Arbeitsmed Arbeitsschutz Prophyl Ergonomie; VOL 32, ISS 4, 1982, P128-37

Woolrich PF
Toxicology, industrial hygiene and medical control of TDI, MDI and PMPPI.
Am Ind Hyg Assoc J; VOL 43, ISS 2, 1982, P89-97 (REF: 33)

Malo JL ; Zeiss CR
Occupational hypersensitivity pneumonitis after exposure to diphenylmethane diisocyanate.
Am Rev Respir Dis; VOL 125, ISS 1, 1982, P113-6

Hurst UJ
Occupational asthma.
J Lab Clin Med; VOL 99, ISS 5, 1982, P611-4

Andersen M ; Binderup ML ; Kiel P ; Larsen H ; Maxild J
Mutagenic action of isocyanates used in the production of polyurethanes. Reply to comments
Scand. J. Work, Environ. Health; VOL 8, ISS 1, 1982,80-1

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

**SUPPORTING ORGANIZATION NUMBER(S):**
Contract No. and/or Control No: NTP No. 10190-K
NCI No. C60402

**PROJECT TITLE:**
Tests for Toxicologic and Carcinogenic Effects: Status of Ethylenediamine

**INVESTIGATOR(S):**
For further information, contact

Dr. J. French

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
Name and Address. Including Zip Code.

**PERIOD FOR THIS NRP:**
Start Date:
End Date:
Annual Funding:

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Chronic testing of ethylenediamine has been deferred as of January 1982 because an industrial study is in progress.

CAS Registry No.
Ethylenediamine 107-15-3

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Peterson LG ; DePass LR ; Yang RS ; Weil CS
DERMAL CARCINOGENESIS IN MICE EXPOSED TO LIFE-TIME SKIN PAINTING OF ETHYLENEDIAMINE
Toxicology Research Projects Directory, Vol.06 iss.10 1981

Dean J
CARCINOGENESIS BIOASSAY OF ETHYLENEDIAMINE
Toxicology Research Projects Directory, Vol.06 iss.10 1981

DePass LR ; Zelenak JP ; Yang RS ; Weil CS
RAT TERATOLOGY FEEDING STUDY OF ETHYLENEDIAMINE DIHYDROCHLORIDE (EDA.2HCL)
Toxicology Research Projects Directory, Vol.06 iss.10 1981

Woodside MD ; DePass LR ; Yang RS ; Weil CS
TWO GENERATION REPRODUCTION STUDY OF ETHYLENEDIAMINE DIHYDROCHLORIDE IN RATS
Toxicology Research Projects Directory, Vol.06 iss.10 1981

Peters A
CARCINOGEN BIOASSAY OF THREE CHEMICALS
Toxicology Research Projects Directory, Vol.06 iss.09 1981

HAGMAR L ; BERGOO B ; SIMONSSON BG
Piperazine-induced occupational asthma.
J OCCUP MED; 24 (3). 1982. 193-197.

Ohsawa T ; Ishizu S
Solvent effects on skin sensitization with diphenylmethane diisocyanate
Tokyo Joshi Ika Daigaku Zasshi; VOL 52, ISS 5, 1982,770-7

Health hazard evaluation report no. HHE-80-113-114, Mobay Chemical Corporation, Plastics and Coatings Division, Pittsburgh, Pennsylvania
Report; ISS HHE-80-113-114; Order No. PB82-193574., 1980,15 pp.

Thomas HF ; Hartman PE ; Mudryj M ; Brown DL
Nitrous acid mutagenesis of duplex DNA as a three-component system
Mutat. Res.; VOL 61, ISS 2, 1979,129-51

Yang RS ; Woodside MD ; Weil CS
FEEDING STUDY OF ETHYLENEDIAMINE DIHYDROCHLORIDE IN RATS
Toxicology Research Projects Directory, Vol.05 iss.06 1980

VAN RENSBURG J FJ
HEALTH ASPECTS OF ORGANIC SUBSTANCES IN SOUTH AFRICAN WATERS OPINIONS AND REALITIES
WATER S A (PRETORIA); 7 (3). 1981. 139-149.

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10002-S
NCI No. C02799

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Formaldehyde

INVESTIGATOR(S):
For further information, contact

Dr. R. Maronpot

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for chronic testing of formaldehyde were cancelled in January 1982 because of the existence of an adequate CIIT study.

CAS Registry No.
Formaldehyde 50-00-0

TOX-TIPS OCTOBER 1982 77-31

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

NIEMELA R ; VAINIO H
Formaldehyde exposure in work and the general environment:
Occurrence and possibilities for prevention.
SCAND J WORK ENVIRON HEALTH; 7 (2). 1981. 95-100.

Albert RE ; Sellakumar AR ; Laskin S ; Kuschner M ; Nelson N
Snyder CA
Gaseous formaldehyde and hydrogen chloride induction of nasal cancer in the rat.
JNCI; VOL 68, ISS 4, 1982, P597-603

Alarie Y
Dose-response analysis in animal studies: prediction of human responses
EHP, Environ. Health Perspect.; VOL 42,, 1981,9-13

Elliot L
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF FORMALDEHYDE
Toxicology Research Projects Directory, Vol.06 iss.08 1981
Epidemiology Research Projects Directory, 1981

Grajecki C ; Kramaschke V
Carcinogenic risks of formaldehyde
Brauwelt; VOL 121, ISS 47, 1981,1852-4

Boreiko CJ ; Couch DB ; Swenberg JA
Mutagenic and carcinogenic effects of formaldehyde
Environ. Sci. Res.; VOL 25, ISS Genotoxic Eff. Airborne Agents, 1982,353-67

Perera F ; Petito C
Formaldehyde: a question of cancer policy?
Science; VOL 216, ISS 4552, 1982, P1285-91

Beritic T ; Kovac S ; Dimov D
Formaldehyde in current environmental toxicology
Arh. Hig. Rada Toksikol.; VOL 32, ISS 4, 1981,363-94

NATL INST OCCUP SAF HEALTH
Formaldehyde: Evidence of carcinogenicity.
NIOSH (NATL INST OCCUP SAF HEALTH) CURR INTELL BULL; 0 (34). 1981. 1-15.

Takahashi M
Carcinogenicity of formaldehyde. I
Hen'igen to Dokusei; VOL 4, ISS 4, 1981,102-11

Dalbey WE
Formaldehyde and tumors in hamster respiratory tract
Toxicology; VOL 24, ISS 1, 1982,9-14

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):

Contract No: and/or Control No: NTP No. 10121-J
NCI No. C56224

PROJECT TITLE:

Tests for Toxicologic and Carcinogenic Effects: Status of Furfuryl Alcohol

INVESTIGATOR(S):

For further information, contact

Dr. R. Irwin

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:

Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for chronic testing of furfuryl alcohol were cancelled in February 1982 in preference for furfuryl. (See TOX-TIPS, 77-13.)

CAS Registry No.
Furfuryl alcohol 98-00-0

TOX-TIPS OCTOBER 1982 77-33

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Grady T M
Criteria for a recommended standard - occupational exposure to furfuryl alcohol
Report; ISS DHEW/PUB/NIOSH-79-133; Order No. PB80-176050,, 1979,72 pp.

Robbins A
Criteria for a recommended standard. Occupational exposure to furfuryl alcohol
DHEW (NIOSH) Publ. (U. S.); ISS 79-133,, 1979,60 pp.

Bodyfelt FW ; Landsberg JD ; Morgan ME
NEW AND IMPROVED DAIRY PRODUCTS
Toxicology Research Projects Directory, Vol.05 iss.11 1980

BARTHELMESS A ; ELKABARITY A
CHEMICALLY INDUCED MULTIPOLAR MITOSES. PART 3
PROTOPLASMA; 54:455-475,1962

COCKCROFT DW ; CARTIER A ; JONES G ; TARLO SM ; DOLOVICH J
HARGREAVE FE
Asthma caused by occupational exposure to a furan-based binder system.
J ALLERGY CLIN IMMUNOL; 66 (6). 1980. 458-463.

PETTERSON B ; CURVALL M ; ENZELL CR
Effects of tobacco smoke compounds on the noradrenaline-induced oxidative metabolism in isolated brown fat cells.
TOXICOLOGY; 18 (1). 1980 (RECD. 1981). 1-16.

Gadalina ID ; Malysheva MV
Experimental data for the determination of maximum permissible concentrations furfuryl alcohol in the work place
Gig. Tr. Prof. Zabol.; ISS 9, 1981,52-3

Alcarese AA Jr ; Reisdorf RP
An Industrial Hygiene Study of Urea Formaldehyde Foam Insulation Application Activities at Thermoseal of Maryland, Inc
Govt Reports Announcements & Index (GRA&I), Issue 02, 1982

Gadalina ID ; Malysheva MV
[Experimental data on establishing the maximum permissible concentration of furyl alcohol in the air of a work area]
Gig Tr Prof Zabol, ISS 9, 1981, P52-3

Anon
An Industrial Hygiene Study of Urea Formaldehyde Foam Insulation Manufacturing at Rapco Foam, Inc., Florence, South Carolina, 28-30 August 1979 and 25-27 September 1979
Govt Reports Announcements & Index (GRA&I), Issue 24, 1981

# INDEX OF COMPOUNDS

Azodicarbonamide
  Long-term - carcinogenicity...77:17
Bromobenzene
  Long-term - carcinogenicity...77:23
(-)-beta-Cadinene
  Long-term - carcinogenicity...77:19
Chlorpromazine hydrochloride
  Long-term - carcinogenicity...77:21
Diethyl phthalate
  Long-term - carcinogenicity...77:25
4,4'-Diphenylmethane diisocyanate
  Carcinogenicity...77:27
Ethylenediamine
  Long-term - carcinogenicity...77:29
Formaldehyde
  Long-term - carcinogenicity...77:31
Furfural
  Mouse - gavage - long-term - carcinogenicity...77:13
  Rat - gavage - long-term - carcinogenicity...77:13
Furfuryl alcohol
  Long-term - carcinogenicity...77:33
Quercetin
  Rat - feed - long-term - carcinogenicity...77:15

## Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11, 77:31
50-34-0 Propantheline bromide...74:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl
phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-41-0 Dephenylhydantoin(phenytoin)...76:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
60-87-7 Promethazine...73:31
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9, 72:27
69-09-0 Chlorpromazine hydrochloride...77:21
71-43-2 Benzene...55:25, 67:7
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-38-7 Vinylidene fluoride...68:35
75-44-5 Phosgene...73:29
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-06-1 Acrylamide...55:21, 55:23
79-11-8 Chloroacetic acid...57:19
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5
81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21
84-66-2 Diethyl phthalate...77:25

| | |
|---|---|
| 87-62-7 | 2,6-Xylidine...56:29, 59:13 |
| 87-86-5 | Pentachlorophenol...66:5 |
| 89-63-4 | 4-Chloro-2-nitroaniline...70:27 |
| 91-20-3 | Naphthalene...69:7 |
| 91-23-6 | o-Nitroanisole...73:25 |
| 91-64-5 | Coumarin...57:27 |
| 91-79-2 | Thenyldiamine (Pharmaceutical)...64:9 |
| 91-80-5 | Methapyrilene...64:15 |
| 91-81-6 | Tripelenamine...64:7 |
| 91-84-9 | Pyrilamine...64:11 |
| 92-48-8 | 6-Methylcoumarin...57:23 |
| 93-76-5 | 2,4,5-T...66:5 |
| 94-66-2 | Diethyl phthalate...57:31 |
| 94-75-7 | 2,4-D...66:5 |
| 95-50-1 | 1,2-Dichlorobenzene...55:31 |
| 95-86-3 | 2,4-Diaminophenol...64:25 |
| 95-95-4 | 2,4,5-Trichlorophenol...68:33 |
| 96-09-3 | Styrene oxide...65:17 |
| 96-18-4 | 1,2,3-Trichloropropane...74:21 |
| 96-45-7 | Ethylenethiourea...76:25 |
| 98-00-0 | Furfuryl alcohol...77:33 |
| 98-01-0 | Furfural...77:13 |
| 98-85-1 | alpha-Methylbenzyl alcohol...61:23 |
| 98-95-3 | Nitrobenzene...71:29 |
| 100-01-6 | p-Nitroaniline...73:23 |
| 100-02-7 | p-Nitrophenol...65:13 |
| 100-40-3 | 4-Vinylcyclohexene...57:9 |
| 100-41-4 | Ethylbenzene...69:21 |
| 100-42-5 | Styrene...55:27 |
| 100-44-7 | Benzyl chloride...65:5 |
| 100-52-7 | Benzaldehyde..76:19 |
| 101-68-8 | 4,4'-Diphenylmethane diisocyanate...77:27 |
| 101-90-6 | Diglycidyl resorcinol ether...63:9 |
| 101-77-9 | 4,4'-Methylenedianiline...63:13 |
| 103-90-2 | 4-Hydroxyacetanilide...57:25 |
| 104-55-2 | Cinnamaldehyde...64:27 |
| 106-46-7 | 1,4-Dichlorobenzene...55:33 |
| 106-47-8 | p-Chloroaniline...60:21 |
| 106-87-6 | 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25 |
| 106-92-3 | Allyl glycidyl ether...76:17 |
| 107-02-8 | Acrolein...59:23 |
| 107-07-3 | Ethylene chlorohydrin...58:19 |
| 107-15-3 | Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17, 77:29 |
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-86-1 | Bromobenzene...77:23 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9 |
| 109-99-9 | Tetrahydrofuran...74:17 |
| 110-00-9 | Furan...76:27 |

110-54-3 Hexane...55:21, 69:23, 71:33
110-80-5 2-Ethoxyethanol...65:3, 66:9
111-15-9 2-Ethoxyethanol acetate...65:3
111-30-8 Glutaraldehyde...57:15
111-76-2 2-Butoxyethanol...65:3, 66:9
111-90-0 2-(2-Ethoxyethoxy)ethanol...65:3
113-45-1 Methylphenidate...72:33
115-07-1 Propylene...58:23
115-09-3 Methylmercuric chloride...55:23
115-96-8 Tris(2-chloroethyl) phosphate...59:27
117-39-5 Quercetin...77:15
119-90-4 3,3'-Dimethoxybenzidine...68:25
(petroleum)...66:13, 66:15
119-93-7 3,3'Dimethylbenzidine...76:13
120-32-1 o-Benzyl-p-chlorophenol...72:13
120-40-1 Lauric acid dietholamine (con 1/1);
(Bis(2-hydroxyethyl)lauramide)...61:21
121-19-7 Roxarsone...59:19
121-79-9 Propyl gallate...63:17
123-72-8 Butyraldehyde...72:11
123-77-3 Azodicarbonamide...77:17
124-40-3 Dimethylamine...71:27
124-64-1 Tetrakis (hydroxymethyl) phosphonium chloride...55:17
127-18-4 Tetrachloroethylene...56:23, 59:15
127-85-5 Sodium arsanilate...68:31
132-98-9 Penicillin V Potassium...58:7
135-88-6 N-phenyl-2-naphthalamine...62:21
136-77-6 4-Hexylresorcinol...61:17
137-09-7 2,4-Diaminophenol dihydrochloride...64:25
140-88-5 Ethyl acrylate...58:15
148-65-2 Chlorothen...72:25
150-68-5 Monuron...58:21
298-81-7 8-Methoxypsoralen...65:7
303-47-9 Ochratoxin A...62:23, 69:5
333-18-6 Ethylenediamine dihydrochloride...60:5, 60:7, 60:9
396-01-0 Triamterene...74:19
458-37-7 Curcumin...76:15
480-81-9 Seneciphylline...74:13
482-89-3 C.I. Vat Blue 1...69:17
469-21-6 Doxylamine...64:23
470-82-6 1,8-Cineole...64:29
509-14-8 Tetranitromethane...55:15, 56:27
518-47-8 C.I. Acid Yellow 73...58:11
523-47-7 (-)-beta-Cadinene...77:19
542-56-3 Isobutyl nitrite...64:17
542-75-6 1,3-Dichloropropene...63:7
542-78-9 Malonaldehyde...58:17
555-30-6 Methyldopa...67:29
569-61-9 C.I. Basic Red 9, monohydrochloride...58:13
583-39-1 2-Mercaptobenzimidazole...69:27
584-84-9 2,4-Toluene diisocyanate...59:7
598-55-0 Methyl carbonate...67:27
673-06-3 D-phenylalanine...70:9
828-00-2 Dimethoxane...61:11
868-85-9 Dimethyl hydrogen phosphite...59:3

| | |
|---|---|
| 924-42-5 | N-Methylolacrylamide...57:21 |
| 989-38-8 | Rhodamine 6G...58:9 |
| 1271-19-8 | Titanocene dichloride...60:31 |
| 1306-19-0 | Cadmium oxide...68:21 |
| 1306-23-6 | Cadmium sulfide...68:23 |
| 1309-37-1 | Ferric oxide...62:5 |
| 1313-27-5 | Molybdenum trioxide...70:7 |
| 1314-13-2 | Zinc oxide...70:21 |
| 1314-62-1 | Vanadium pentoxide...70:19 |
| 1317-71-1 | Olivine...62:7 |
| 1325-37-7 | C.I. Direct Yellow 11...69:15 |
| 1330-20-7 | Xylene...62:11, 67:11 |
| 1330-78-5 | Tricresyl phosphate...74:23 |
| 1338-23-4 | 2-Butanone, peroxide...62:15 |
| 1344-00-9 | Sodium aluminosilicate...56:15 |
| 1406-18-4 | Vitamin E...70:17 |
| 1817-73-8 | 2-Bromo-4,6-dinitroaniline...69:9 |
| 1854-26-8 | Dimethyloldihydroxyethyleneurea...60:19 |
| 1972-08-3 | -trans-delta(9)-Tetrahydrocannabinol...70:15 |
| 1982-37-2 | Methdilazine...72:31 |
| 2058-46-0 | Oxytetracycline hydrochloride...57:13 |
| 2244-16-8 | d-Carvone...76:21 |
| 2385-85-5 | Mirex...63:15 |
| 2425-85-6 | C.I. Pigment Red 3...61:15 |
| 2429-73-4 | C. I. Direct Blue 2...72:17 |
| 2429-74-5 | C. I. Direct Blue 15...68:27 |
| 2429-74-5 | C. I. Direct Blue 15...68:25 |
| 2475-45-8 | C. I. Disperse Blue 1...65:25 |
| 2610-05-1 | C. I. Direct Blue 1...68:25 |
| 2624-17-1 | Sodium cyanurate...56:17 |
| 2757-90-6 | Agraitine...63:3 |
| 5634-39-9 | Iodinated glycerol...62:19 |
| 5716-15-4 | Maleic hydrazide diethanolamine salt...58:5 |
| 5989-27-5 | d-Limonene...60:27 |
| 6358-31-2 | C. I. Pigment Yellow 74...72:21 |
| 6459-94-5 | C. I. Acid Red 114...72:15 |
| 6471-49-4 | C.I. Pigment Red 23...61:13 |
| 7166-19-0 | beta-Bromo-beta-nitrostyrene...69:11 |
| 7440-41-7 | Beryllium...66:11 |
| 7487-94-7 | Mercuric chloride...59:31 |
| 7631-86-9 | Silica...62:7, 71:43 |
| 7681-49-4 | Sodium fluoride...56:19 |
| 7782-50-5 | Chlorine...64:3, 71:41 |
| 7783-06-4 | Hydrogen sulfide...71:37 |
| 7783-81-5 | Uranium-238 hexafluoride...55:9 |
| 7785-87-7 | Manganese sulfate...72:29 |
| 8024-37-1 | Turmeric oleoresin (cucumin)...76:15 |
| 9002-92-0 | Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5 |
| 9003-39-8 | 1-Vinyl-2-pyrrolidinone polymers...68:29 |
| 9005-65-6 | Polysorbate 80...60:15 |
| 1321-12-6 | Nitrotoluene (undefined mixture)...73:27 |
| 10028-15-6 | Ozone...59:25 |
| 10098-97-2 | Strontium-90...56:9 |

| | |
|---|---|
| 10325-94-7 | Cadmium nitrate...69:13 |
| 10361-37-2 | Barium chloride...70:25 |
| 10599-90-3 | Chloramine...72:23 |
| 12001-28-4 | Crocidolite...63:27 |
| 12001-29-5 | Chrosotile...63:25 |
| 12070-12-1 | Tungsten carbide [WC]...74:25 |
| 12172-73-5 | Amosite...63:23 |
| 12266-32-9 | Plutonium-238 dioxide...61:7, 73:21 |
| 12741-11-6 | Zirconium silicate...62:7 |
| 13552-44-8 | 4,4'-Methylenedianiline dihydrochloride...63:13 |
| 13961-86-9 | Oleic acid dietholamine salt...65:15 |
| 13968-56-4 | Plutonium-239 tetranitrate...61:7, 73:21 |
| 14047-09-7 | 3,3',4,4'-Tetrachloroazobenzene...58:3 |
| 14807-96-6 | Talc...70:13 |
| 14808-60-7 | Quartz...62:5 |
| 14567-73-8 | Tremolite...63:19 |
| 15117-96-1 | Uranium-235...55:9 |
| 16127-62-1 | Amosite...63:23 |
| 16561-29-8 | 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21 |
| 19086-72-7 | Olivine...62:7 |
| 21232-47-3 | 3,3',4,4'-Tetrachloroazoxybenzene...58:3 |
| 21645-51-2 | Hydrated alumina (Aluminum hydroxide)...62:5 |
| 22840-34-2 | Plutonium-239 dioxide...56:11, 61:7, 73:21 |
| 23246-96-0 | Riddelline...74:15 |
| 28407-37-6 | C. I. Direct Blue 218...72:19 |
| 26628-22-8 | Sodium azide...56:31 |
| 26677-58-7 | Plutonium-239 citrate...56:11 |
| 36355-01-8 | Hexabromobiphenyl...64:13 |
| 52551-67-4 | HC Yellow No. 4...64:5 |
| 53799-46-5 | Crocidolite...63:27 |
| 58425-86-8 | Aluminum silicate...62:7 |
| 61076-97-9 | Chrysotile...63:25 |
| 61105-31-5 | Crocidolite...63:27 |
| 64741-55-5 | Light catalytic cracked naphtha...67:3, 67:5 |
| 64741-56-6 | Vacuum residuum (petroleum)...67:21 |
| 64741-62-4 | Catalytic cracked clarified oil (petroleum)...67:23 |
| 64741-63-5 | Light catalytic reformed naphtha (petroleum)...66:25, 66:27 |
| 64741-87-3 | Sweetened naphtha (petroleum)...66:17, 66:19 |
| 64742-48-9 | Hydrotreated heavy naphtha (petroleum)...67:17, 67:19 |
| 64742-80-9 | Hydrodesulfurized middle distillate (petroleum)...66:13, 66:15 |
| 64742-81-0 | Hydrodesulfurized kerosene (petroleum)...66:21, 66:23 |
| 68334-30-5 | Petroleum products, diesel oil...61:9, 73:17 |
| 68512-90-3 | Diesel test fuel...73:17 |
| 68476-34-6 | Fuels, diesel, No. 2...61:9, 73:17 |

## Supporting and Performing Organizations

American Petroleum Institute
  *Coate, W....67:7
  *Furst, A....67:25
  *Jagannath,...67:13
  *Schroeder, R.E....67:11
  *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  *Weaver, N.K....55:27
  Sponsored studies...67:23
American Health Foundation
  Williams, G. M....75:15, 75:17, 75:19
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5, 72:13, 74:23, 76:23, 76:25
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13, 76:17
Biodynamics...67:11
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory...71:43
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S.H...60:5, 60:7, 60:9, 60:11, 60:17
  Zelenak, J.P....60:9
Central Institute for Nutrition & Food...68:19
Chemical Industry Institute of Toxicology
  *Barrow, C. S....71:27, 71:41
  *Bus, J.S....71:37, 71:39
  *Drew, R. T....71:43
  *Gralla, E....55:3, 55:5, 71:33, 71:35
  Hamm, T....71:29, 71:31
  *Kutzman, R. S....71:43
  Sponsored studies...71:27, 71:29, 71:31
Chemical Manufacturers Association
  *Stack, C.R... 55:27, 55:29, 55:31, 55:33, 75:15, 75:17, 75:19
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15, 72:23, 72:29, 74:17
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23, 72:15, 76:13
  Coate, W. B....55:25
Hazelton Raltec Inc....72:33, 73:23, 73:25, 74:15, 74:21
Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute 73:13, 73:15, 73:17, 73:19, 73:21
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9, 73:13, 73:15
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp....57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17, 72:19, 74:11, 74:19, 76:21
  Ulrich, C....71:41
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13, 72:31, 73:31
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33, 76:15, 77:15
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
Morgantown Energy Technology Center...73:13, 73:15,
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19, 75:13, 75:21
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3

National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19
  *Brown, D....55:9
  *Boeniger, M....55:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  *Cox, C....60:3
  *Donaldson, H....66:3
  *Elliott, L....56:3, 56:7
  *Herrick, B....60:3
  *Honchar, P....66:5
  Lewis, T. R....62:5
  Nelson, B.K....65:3
  *Reeve, G....66:7
  *Okun, A....66:11
  *Robinson, C....55:7
  *Rosenberg, M....66:9
  Stern, F. B....62:3
  *Taylor, P....55:13
  Wagner, W. D....62:9
  *Whalen, J....56:5
  *Whitmire, C....55:15
  Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
National Institutes of Health
  Sponsored studies...61:3
National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21, 72:11, 72:17, 72:25, 72:27, 73:27, 73:29, 74:13, 74:21, 74:25, 75:13, 75:21
  *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
  *Birnbaum, L....59:9, 72:13, 77:17
  *Boorman, G....76:17
  *Brown, S....69:7, 70:13
  *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15, 73:23, 73:25, 76:23, 76:25
  *Chu, K....69:9, 70:5
  *Creasia, D....65:5, 65:17, 65:23
  *Dean, J....60:17, 65:11
  *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
  *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
  *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23, 74:11
  *Eastin, W....69:5, 69:5, 69:15, 72:21
  *French, J....77:29
  *Goldman, D....70:15, 72:31, 74:15
  *Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29, 76:15
  *Gupta, B....59:5, 70:25, 74:17
  *Hartwell, W....58:5, 59:19, 59:21, 60:21
  *Huff, J....63:15, 64:33
  *Irwin, R....59:29, 64:25, 65:13, 69:19, 74:23, 76:27, 77:13, 77:33

*Project Officer/Compound Manager

National Toxicology Program (Cont.)
*Jackson, C....64:17
*Jameson, C. W....55:17, 60:27, 63:3
*Kluwe, W. M....57:5, 65:9, 72:33, 76:19, 77:23, 77:25
*Lamb, J. C....57:29, 63:13, 77:21, 77:27
*Luster, M....73:31
*Maronpot, R....77:31
*Matthews, H....59:11, 59:27, 65:21
*McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
*McCoy, J.L....60:19, 69:25, 70:23, 70:27, 76:21, 77:15
*Melnick, R....56:21, 59:17, 63:11
*Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17, 72:15, 72:19, 76:13
*Moorman, W....70:21
*Niemeier, R....70:19
*Padarathsingh, M....62:19
*Plotnick, H....69:21
*Powers, M....56:23, 57:3, 57:9, 57:15, 57:21, 77:19 59:15, 62:23, 64:5, 64:19
*Quest, J....67:27, 69:27, 70:7
*Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
*Van Stee, E....60:13
*Walters, D....72:29
*Ward, J.M....58:17, 58:19, 58:21, 61:11
*Weber, H....69:11
*Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11, 72:23, 74:19
Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25, 76:19, 76:27, 77:13
SRI International...61:19, 62:17, 65:7
Springborn Institute for Bioresearch, Inc....58:7
Texaco
Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
Cavender, F....55:3, 55:5, 71:33, 71:35
Morgan, J. M....71:37, 71:39

*Project Officer/Compound Manager

Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29, 72:23
Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

# ANNOTATED BIBLIOGRAPHIES ON CURRENT TOPICS IN TOXICOLOGY

Federal organizations concerned with toxic substances share a common need for basic information about chemical substance(s) and related topics. In recognition of this, several government agencies have joined in establishing the Information Response to Chemical Concerns (IRCC) Project. One objective of this Project is to produce annotated bibliographies on current topics in toxicology. These bibliographies are prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine and published by the Federation of American Societies for Experimental Biology.

The IRCC Project is sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Diesease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The following annotated bibliographies are now available.

**NLM/TIRC-80/1 HEALTH AND ENVIRONMENTAL EFFECTS OF ACID RAIN.** *An abstracted literature collection 1966-1979.* N. S. Dailey and S. G. Winslow, Toxicology Information Response Center, March 1980. 202 pages. $15.00 postpaid.

Major subject categories include: *Atmospherics; Aquatic and Terrestrial Environmental Effects; Health Effects; Measurement Methods; Modeling.* A listing of current research projects, including a brief description, sponsor and principal investigator, is provided at the end of the bibliography.

**NLM/TIRC-80/2 ASBESTOS IN AIR.** *A bibliography with abstracts 1964-1980.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, July 1980. 52 pages. $7.00 postpaid.

This bibliography includes references pertaining to quantitative methods of determining airborne asbestos particles and quantitative levels of atmospheric asbestos fibers. A permuted title index (KWOC) is also provided.

**NLM/TIRC-80/3 CHEMICAL WASTE DISPOSAL–Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes.** *A selected bibliography with abstracts 1964-1979.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, November 1980. 82 pages. $10.00 postpaid.

References are categorized in the following topical areas: *Adverse Effects* on Aquatic Species, Terrestrial Species and Vegetation; *Methods of Disposal* including burial, injection, landfill, spray and water; *Radioactive Waste Disposal; Environmental Impact* including analysis, monitoring, identification, environmental contamination and transport; *Health Effects* including biological studies, toxicity, tissue accumulation and mortality data for aquatic and terrestrial animals.

**NLM/TIRC-80/4 HEALTH ASPECTS OF UREA/FORMALDEHYDE COMPOUNDS.** *A selected bibliography with abstracts 1963-1980.* N. P. Drago, J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, December 1980. 52 pages. $7.50 postpaid.

Each of the 134 references contains a citation in alphabetical order by author and an abstract where available. A title index is also provided. A number of the references (44%) pertain to urea-formaldehyde compounds used in home insulation and in the fabrication of construction materials.

**NLM/TIRC-81/1 TOXICITY OF VANADIUM COMPOUNDS.** *A Bibliography with Abstracts 1965-1980.* N. S. Dailey, S. A. Mashburn and S. G. Winslow, Toxicology Information Response Center, July 1981. 100 pages. $15.00 postpaid.

This report was produced primarily because of concern for the effects of potential exposure to vanadium compounds associated with synthetic fuel processes. The 261 references each contain a citation as well as an abstract where available. A title index and chemical name index are also provided.

**NLM/TIRC-81/2. THE EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE IMMUNE SYSTEM.** *A selected bibliography with Abstracts, 1969-1980.* By S. G. Winslow, TIRC, Oak Ridge National Laboratory. November 1981, 78 pages, $10.00 postpaid.

The report contains 216 references, each containing a citation (in alphabetic order by author), an abstract (where available), chemical name(s), and species used. Several indices (chemical name, species, and title) are provided. Sources searched included ten DIALOG$^R$ files plus MEDLINE and TOXLINE.

**NLM/TIRC-82/1. HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM.** *A selected bibliography with Abstracts, 1963-1981.* By J. G. Pruett and S. G. Winslow. Toxicology Information Response Center, October 1982. 62 pages. $10.00 postpaid.

The report contains 305 reference, including citations on occupational or inadvertent (environmental) exposure to chemicals. Each listing contains a citation, an abstract (where available), chemical name(s) (if specified), and keywords. Information concerning current research projects and reviews are in separate sections at the end of the bibliography. A total of ten DIALOG$^R$ and MEDLARS$^R$ sources were searched.

---

**ORDER FORM –**

**NLM/TIRC ANNOTATED BIBLIOGRAPHIES**

| | | |
|---|---|---|
| ☐ | NLM/TIRC 80/1 Health and Environmental Effects of Acid Rain | $15.00 |
| ☐ | NLM/TIRC 80/2 Asbestos in Air | $ 7.00 |
| ☐ | NLM/TIRC 80/3 Chemical Wast Disposal | $10.00 |
| ☐ | NLM/TIRC 80/4 Health Aspects Urea/Formaldehyde Compounds | $ 7.50 |
| ☐ | NLM/TIRC 81/1 Toxicity of Vanadium Compounds | $15.00 |
| ☐ | NLM/TIRC 81/2 The Effects of Environmental Chemicals on the Immune System | $10.00 |
| ☐ | NLM/TIRC 82/1 Health Effects of Environmental Chemicals on the Adult Reproductive System | $10.00 |

Send your check or purchase order to: F.A.S.E.B. Special Publications, 9650 Rockville Pike, Bethesda, MD 20814

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

| | |
|---|---|
| SUPPORTING ORGANIZATION: | SUPPORTING ORGANIZATION NUMBER(S):<br>Contract No:<br>and/or<br>Control No: |
| PROJECT TITLE: | |
| INVESTIGATOR(S): | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION |
| PERFORMING ORGANIZATION:<br>Name and Address.<br>Including Zip Code. | PERIOD FOR THIS NRP:<br>Start Date:<br>End Date:<br>Annual Funding: |
| PROJECT SUMMARY: | |

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

**Supporting Organization**

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

**Project Title**

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

**Investigator(s)**

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

**Performing Organization**

Enter name of organization where work is actually being done.

**Start Date, End Date and Annual Funding**

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

**Project Summary**

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

**Send All Notices of Research Projects Directly To:**

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

NOTICE OF RESEARCH PROJECT

# TOX-TIPS

**NATIONAL LIBRARY OF MEDICINE**
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

**Contract No:**
**and/or**
**Control No:**

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

**Start Date:**

**End Date:**

**Annual Funding:**

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

**Supporting Organization**

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

**Project Title**

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

**Investigator(s)**

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

**Performing Organization**

Enter name of organization where work is actually being done.

**Start Date, End Date and Annual Funding**

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

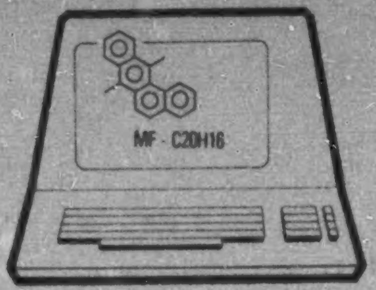
**Project Summary**

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

**Send All Notices of Research Projects Directly To:**

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131



**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# CHEMLINE
CHEMICAL DICTIONARY ONLINE
# CONDENSED

Bethesda, Maryland 20209

**CHEMLINE DEFINED**

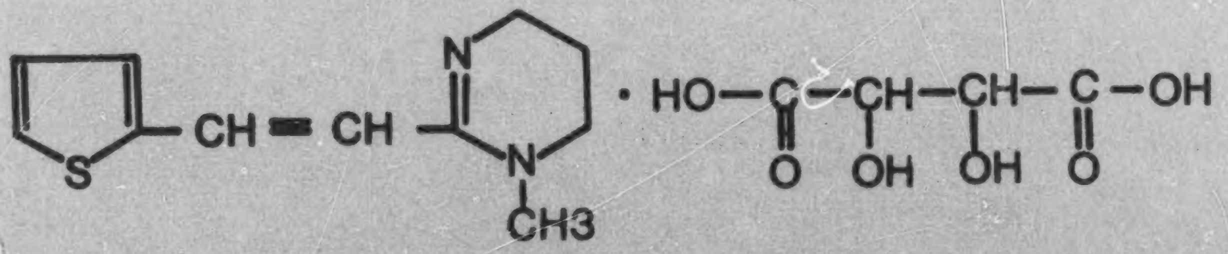
CHEMLINE (CHEMical Dictionary onLINE) is the National Library of Medicine's online, interactive chemical dictionary file created by the Specialized Information Services in collaboration with Chemical Abstracts Service (CAS). It provides a mechanism whereby over 500,000 chemical substances can be searched and retrieved online. This file contains CAS Registry Numbers; molecular formulas; CA chemical index nomenclature; generic and trivial names; and a locator designation which points to other files in the NLM system and the TSCA Inventory. In addition, where applicable, each CAS Registry Number record in CHEMLINE contains ring information including: number of component rings within a ring system, ring sizes, ring elemental compositions, and component line formulas.

**CHEMLINE ACCESSED**

CHEMLINE is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland. The communications linkage is provided by nation-wide networks using telephone lines and small computers with access nodes located in many cities.

**CHEMLINE SEARCHED**

The user searches CHEMLINE by entering a chemical name, generic name, trivial name, company identification name, or a molecular formula. If the exact name of a chemical substance is unknown, a search may be conducted using name fragments, formula fragments, and/or ring analysis terms. This feature also allows searching at a substructure level. Consider the molecule pyrantel tartrate:



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

**CHEMLINE AVAILABILITY**

CHEMLINE is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 9:00 A.M. to 5:00 P.M. (Eastern Time.)

**CHEMLINE COST**

The cost of access to the CHEMLINE file is $101 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $94 per hour at all other times. There is a charge of $0.45 per page for offline printouts.

**CHEMLINE USER SERVICES**

For Online Systems services including access to the CHEMLINE file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-6193

For CHEMLINE content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

78

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

PB82-915011
NUMBER 78
NOVEMBER 1982

NEWARK PUBLIC LIBRARY

APR 1 1 1983

U. S. GOVT. PUBS.
DEPOSITORY 376

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## Table of Contents

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
15 The Sentinel Health Event (Occupational)
17 Investigation of Workers Exposed to 4,4'-Methylenebis (2-chloroaniline) (MOCA)
19 Case Control Study of Bladder Cancer in Hamilton County, Ohio
21 Cytogenetic Assays and Analysis of Occupational Populations
23 Update of Completed Cohort Mortality Studies
25 Tests for Toxicologic and Carcinogenic Effects: Status of Methdilazine
27 Status of p-Quinone
29 CMA Biomedical and Environmental Special Program: Arsenic
31 CMA Biomedical and Environmental Special Program: Benzene
33 INDEX OF COMPOUNDS
34 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
40 SUPPORTING AND PERFORMING ORGANIZATIONS
45 NOTICE OF RESEARCH PROJECT BLANK FORM
47 RTECS CONDENSED

Sponsored by

Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20. 3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:
North American Continent addresses $45
All others $90
Bulk rates available on request from NTIS

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

## FROM THE EDITOR

The Specialized Information Services (SIS) Division of the National Library of Medicine has developed a series of user aids describing the Toxicology Information Program's online databases and other projects. Materials on TOXLINE, CHEMLINE, RTECS, and the Toxicology Data Bank (TDB) are available for those interested. These various products are geared to non-users as well as experienced database searchers.

To learn more about how SIS can help yoy meet your information needs, write or call:

Biomedical Information Services Branch
Specialized Information Services
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, MD 20209
Telephone: (301) 496-1131

Carol B. Haberman
EDITOR, TOX-TIPS

# ENVIRONMENTAL TERATOLOGY
# INFORMATION CENTER

Oak Ridge National Laboratory
P.O. Box Y, Bldg. 9224
Oak Ridge, TN 37830

Telephone: (615) 574-7871
FTS: 624-7871

## ENVIRONMENTAL TERATOLOGY INFORMATION CENTER

The Environmental Teratology Information Center (ETIC) was organized in 1975 at the Oak Ridge National Laboratory (ORNL) by the National Institute of Environmental Health Sciences. Its purpose is to collect, organize, and disseminate information on the evaluation of chemical, biological, and physical agents for teratogenic activity. The information in this file is available to individual researchers and physicians, as well as institutions and government research and regulatory agencies. Easy access to this literature facilitates health assessment, research planning, and the prevention of duplication of effort in the field of environmental teratology.

Information in the ETIC file has been drawn from over 2600 sources in the open literature, 15% of which are in languages other than English. These reports relate to teratogenicity of dietary deficiencies; maternal conditions; and chemical, biological, and physical agents in warm-blooded animals. The main focus is on the administration of an agent to a pregnant animal and examination of the offspring at or near birth for structural or functional anomalies. In compling this information ETIC scans key journals as well as many secondary sources and has online access to many computerized data bases.

ETIC is much more than a bibliographic file. There is information on thousands of unique chemicals, and all technical information is indexed for ease and versatility of retrieval. The indexing scheme allows for the addition of new fields as needed. Included in the indexed information is the following, when provided in the article:

Taxonomic and common name and strain of test object
Organ type or embryo cultured
End point examined in offspring
Chemical names or abbreviations
Chemical Abstracts Service (CAS) Registry Numbers
Text abstracts (added on a selective basis)

The ETIC file is available online through the National Library of Medicine TOXLINE file and the U.S. Department of Energy RECON system.

ETIC and EMIC (Environmental Mutagen Information Center) are building a series of auxiliary files containing information related to but not included in either master file. These files are interrelated for searching purposes. The Agent Registry File (ARF), an expansion of a subset of the ETIC and EMIC master files, contains synonyms, formulae, and uses for thousands of unique chemicals, all linked by CAS Registry Numbers. The Animal Information File (AIF) includes strain characteristics and genetic background of laboratory animals. Other auxiliary files include ETIC's Teratology Data Extraction File and the Controlled Vocabulary File. There are also EMIC's Cell Transformation File, Aneuploidy File, Environmental Protection Agency Qualitative Gene-Tox File, and Genetic Toxicology Data Extraction File.

The ETIC staff includes biologists, chemists, linguists, information scientists, and clerical personnel. This staff works closely with the EMIC staff and shares support personnel from ORNL's Information Division and the Computer Sciences Division.

Special services available from ETIC include literature surveys; indexed bibliographies; and bibliographic references on specific agents, organisms, or other indexed terms. Specific questions are answered as time permits.

Oak Ridge National Laboratory is operated by Union Carbide Corporation under Contract W-7405-eng-26 with the U.S. Department of Energy.

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

## JOURNAL LITERATURE

Stebbins, W.C. Concerning the need for more sophisticated animal models in behavioral toxicology. *Environ Health Perspect.*, *44*, 77-85, 1982.

The development of animal models for use in testing sensory behavioral toxicology and the analysis and evaluation of "...threshold levels of impairment" is not sufficient. Tests that are more sensitive and also more quantitative are needed to test the complexity of responses as they are present in day-to-day life. They should be able to monitor not only the state of the receptor organ but also the nervous processes necessary to produce a response. This paper describes techniques for analyzing sensory behaviors in auditory behavior such as intensity discrimination and frequency selectivity. With some modification, these methods can be used to follow more intricate acoustic behaviors such as sound localization and the preception of frequency modulated acoustic signals which are a necessary part of speech and communication sounds.

Winneke, G., Lilienthal, H. and Werner, W. Task dependent neurobehavioral effects of lead in rats. *Arch Toxicol [Suppl] 5*, 84-93, 1982.

This article describes how a combination of task performance and discrimination tests can be utilized to obtain a pattern of behavioral change due to low levels of poisoning and to interpret the data obtained so as to explain the mechanism of action of the toxic substance. "If learning and retention in animals is taken as a measure of cognitive performance, neurobehavioral lead-toxicity cannot easily be explained in terms of cognitive deficit. An interpretation in terms of emotional reactivity or behavioral disinhibition would then seem more convincing, which covers the results from activity studies as well."

Prior, G.T. et al. Importance of schedule of exposure to hexane in causing neurotoxicity. *Neurobehav Toxicol Teratol, 14*, 71-8, 1982.

Repeated brief exposure to hexane at high concentrations (24,000-48,000 ppm) for 6-12 times a day, five days a week for 18 weeks were less effective than those continuously exposed to 1000 ppm five days a week for 11 weeks.

The most severe effects were in animals that received 48,000 ppm for twenty-four 10 second periods for 4 additional weeks after the original 18 week period. This study illustrates the importance not only of total exposure but also the time schedule on which it is given.

Uphouse, L., McLean, S., and Russell, M. Stability of CNS binding sites under various conditions. *Neurotoxicology, 2,* 533-40, 1981.

Of the variables studied, i.e., method of sacrifice, treatment of tissues and gavage of neurotransmittor receptors in the CNS, only freezing of the tissue which decreased protein content of the brain and indirectly decreased estimates of binding sites per brain weight was of importance. Serotonin binding sites were especially affected by freezing. "The potential importance of presumably random variables in neurotoxicology is discussed."

Esler, M. et al. Biochemical quantification of sympathetic nervous activity in humans using radiotracer methodology: fallibility of plasma noradrenaline measurements. *J Cardiovasc Pharmacol, 4,* 152-7, 1982.

Concentrations of noradrenaline in plasma do not accurately indicate activity of the sympathetic nervous system if the clearance rate of this neurohormone are abnormal. Such instances occur in patients with hypertension who receive beta-adrenergic blockers on a regular basis. Clearance also is affected by age resulting in a rise in plasma noradrenaline concentration.

Turker, R.K. Pharmacological evaluation of a new test organ for the dynamic bioassay of neurotransmitter release due to sympathetic stimulation. *Doga, Sari A; Vol 5, Issue Ataturk Ozel Sayisi,* 69-75, 1981.

**Transverse strips from rabbit stomach and aorta were used to follow the release of neurotransmitter following "...periarterial stimulation of the isolated perfused rabbit kidney," dose and frequency responses were obtained in both organ strips. The value of such preparations, especially the strip from the stomach, in the bioassay of noradrenaline is discussed.**

Richardson, R.J. Toxicology of the nervous system. *Toxicol.: Princ. Pract; Vol 1,* 107-43, 1981.

**A review of nervous system chemical toxicity with discussion and many references. Health hazards to the nervous system are also considered.**

Sato, S., Susimoto, S., Chiba, S. An electrophysiological method for detecting visual toxicity in unrestrained rats. *Jpn J. Pharmacol., 32,* 489-97, 1982.

**Methods are described for recording the electroretinogram (ERG) and visual evoked potential (VEP) in unrestrained rats. These methods were used to study long-term toxicity of diaminodiphenoxybutane. In both the ERG and VEP, dose dependent decreases were obtained. The authors conclude: "Thus, this recording technique for ERG and VEP is useful for evaluating the visual toxicity of drugs in unrestrained rats."**

Blough, P.M., and Young, J.S. Psychophysical assessment of visual dysfunction. *Environ Health Perspect. 44,* 47-53, 1982.

**This review with 26 references discusses the various phychophysical techniques available to assess visual function in nonhuman animals. "Problems of particular interest for toxicological research include control of physical stimulus, choice of species, separation of stimulus from attentional effects, response bias, and pre- and post-training efficiency."**

Heywood, R. Histopathological and laboratory assessment of visual dysfunction. *Environ Health Perspect.*, *44*, 35-45, 1982.

> This review covers the "...currently available methods..." for evaluating ocular toxicity. The author stresses the point that "...mechanisms of ocular toxicity are poorly understood..." and also points out the limitations of animal studies in this field.

Shinkman, P.G., Isley, M.R. and Rogers, D.C. Newer laboratory approaches for assessing visual dysfunction. *Environ Health Perspect.*, *44*, 55-62, 1982.

> Analysis of the single cell in terms of the visual cortical receptive field (RF) is stressed in this article. Particular classes of RF's can be affected during development while others are spared. The study of neurotoxic insult to the cortical visual neurons can be approached by the techniques described here. The similarity of degradation of RF properties to the results of dark rearing and binocular deprivation are summarized.

New toxicology for old. A critique of accepted requirements and methodology. Proceedings of the European Society of Toxicology, Dublin, August 17-18, 1981. *Arch Toxicol [Suppl] 5*, 1-384, 1982.

Gobinet, G. The Council of Europe approach to toxicity testing and toxicological evaluation. *Arch Toxicol [Suppl] 5*, 45-7, 1982.

> The Council of Europe, an international and intergovernmental organization, has prepared guidelines for the testing and evaluation of pesticides, flavorings, plastic food packaging as well as cosmetics and their ingredients. These guidelines are intended as models and are open to revision as needed.

Smeets, J. The EEC policy in the hazard assessment of new chemicals. *Arch Toxicol [Suppl] 5,* 33-9, 1982

> The Council of Ministers of the European Communities (EEC) has adopted legislation concerning the classification, packaging, and labelling of "...dangerous substances." The pre-marketing technical dossier requires test results, physiochemical properties, and toxicological and eco-toxicological parameters.

Fender, H. and Malz, W. A simple test for repair kinetic studies of mammalian DNA applied to normal and CLL-lymphocytes. *Stud Biophys, 78,* 79-85, 1980.

Ulreich, J.B. and Chvapil, M. Altered activity in cultured cells caused by contaminants in tubes widely used for blood collection and serum preparation. *In Vitro, 18,* 117-21, 1982.

> Tubes used for drawing blood were shown to contain substances extremely toxic to cell cultures, and in one case (fibroblasts) to be stimulating. "It is, therefore crucial in a properly controlled experiment using serum *in vitro* to collect blood in tubes that exert no toxic or stimulatory effects in the assay or, at least to be consistent in one's choice of tube." In this study none of the tubes used to store serum showed any effect.

Bolton, D.C. et al. An *in vitro* system for studying the effects of ozone on mammalian cultures and viruses. *Environ Res 27,* 466-75, 1982.

Demarini, D.M., Plewa, M.J., and Brockman, H.E. Use of four short-term tests to evaluate the mutagenicity of municipal water. *J Toxicol Environ Health, 9,* 127-140, 1982.

Four short-term tests were used to test the mutagenicity of drinking water in Bloomington, Illinois; namely, reverse mutation in a prokaryote, forward mutation in a mold, mitotic gene conversion in a yeast and reverse mutation in maise. "The advantages and disadvantages of the tests and protocols are discussed in terms of their applicability to the study of the mutagenicity of drinking water. This study may be applicable to humans."

Greim, H. et al. Threshold levels in toxicology: significance of inactivation mechanisms. *Adv Exp Med Biol, 136, Pt B,* 1389-98, 1981.

At low levels of toxicity, toxic effects may be prevented by inactivation of toxic intermediaries. However at higher levels, the inactivation may be overcome. Such results influence the dose effect relationship. This paper cites examples of such effects of inactivation. "It is concluded that information on the metabolism of chemicals is essential for interpretation of toxicity studies in animals and their relevance to man."

Breimer, D.D. Measurement of urinary metabolites of xenobiotics as a non-invasive technique in toxicology. *Arch Toxicol [Suppl] 5,* 162-178, 1982.

Three major advantages can be obtained by measurement of the metabolites of xenobiotics. These are: 1) knowledge of the biotransformation of the xenobiotic; 2) the use of metabolite monitoring in exposure tests and; 3) measurement of the activity of various metabolic pathways. It must also be considered that large individual differences are possible in the metabolism of xenobiotics. Such differences may have profound toxicological implications.

Martin, A.D., and Papworth, D.S. Assessment of mammalian toxicity of pesticides and other chemicals--flexible guidelines or rigid protocols? *Arch Toxicol [Suppl] 5,* 17-28, 1982.

Zbinden, G. Newer diagnostic procedures in chronic toxicity studies in rats. *Arch Toxicol [Suppl] 5*, 141-51, 1982.

> Examples are given of procedures available ranging in complexity from bleeding time to cardiac output and catecholamine-arrhythmia threshold. Aspiration of liver by means of fine needles is also discussed as a technique for early diagnosis of liver lesions. Discrimination in the use of these procedures is required; they should only be used "..to test a clearly stated scientific hypothesis."

Gad, S.C. Statistical analysis of behavioral toxicology data and studies. *Arch Toxicol [Suppl] 5*, 256-66, 1982.

> Toxicological data are often analyzed by statistical procedures which "...either do not have optimal characteristics of sensitivity and power, or for which the underlying assumptions as to the nature of the data are not valid." This situation may arise either because of the lack of statistical sophistication of the toxicologist or lack of understanding by the statistician of the biological assumptions involved. The types of data or observations must first be established, i.e., scores, response rates, error rates, and time-to-end-point, as well as a special type of data obtained in teratology and reproduction studies. Optimal methods may then be developed by considering all the statistical procedures currently available for anlaysis. "The underlying key to this entire process is to establish the biological and statistical nature of the data being generated and to design and analyze experiments accordingly."

Weil, C.S. Statistical analysis and normality of selected hematologic and clinical chemistry measurements used in toxicologic studies. *Arch Toxicol [Suppl] 5*, 237-53, 1982.

In the past, comparison of control and experimental groups has assumed that the data are normal. This basic assumption of normality was tested on treated and control groups from several experiments. The data included measurements of white and red cells, hemoglobin, urea nitrogen and creatinine. The data showed enough deviation from normality in terms of skewness and kurtosis that the authors were led to suggest that nonparametric statistical procedures should be used. The value of concurrent control groups in place of "historical" controls was emphasized.

Beach, J.E. The ferret for non-rodent toxicity studies--a pathologist's view. *Arch Toxicol [Suppl] 5*, 279-82, 1982.

Experience with the use of the ferret for non-rodent drug studies suggest its usefulness for routine toxicity testing. This species is amenable to dosing by gavage and shows gastric damage similar to that seen in the dog. Certain peculiarities of background pathology must be noted.

## ANNOTATED BIBLIOGRAPHIES ON CURRENT TOPICS IN TOXICOLOGY

Federal organizations concerned with toxic substances share a common need for basic information about chemical substance(s) and related topics. In recognition of this, several government agencies have joined in establishing the Information Response to Chemical Concerns (IRCC) Project. One objective of this Project is to produce annotated bibliographies on current topics in toxicology. These bibliographies are prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine and published by the Federation of American Societies for Experimental Biology.

The IRCC Project is sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Diesease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The following annotated bibliographies are now available.

**NLM/TIRC-80/1 HEALTH AND ENVIRONMENTAL EFFECTS OF ACID RAIN.** *An abstracted literature collection 1966-1979.* N. S. Dailey and S. G. Winslow, Toxicology Information Response Center, March 1980. 202 pages. $15.00 postpaid.

Major subject categories include: *Atmospherics; Aquatic and Terrestrial Environmental Effects; Health Effects; Measurement Methods; Modeling.* A listing of current research projects, including a brief description, sponsor and principal investigator, is provided at the end of the bibliography.

**NLM/TIRC-80/2 ASBESTOS IN AIR.** *A bibliography with abstracts 1964-1980.* J. G Pruett and S. G. Winslow, Toxicology Information Response Center, July 1980. 52 pages. $7.00 postpaid.

This bibliography includes references pertaining to quantitative methods of determining airborne asbestos particles and quantitative levels of atmospheric asbestos fibers. A permuted title index (KWOC) is also provided.

**NLM/TIRC-80/3 CHEMICAL WASTE DISPOSAL – Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes.** *A selected bibliography with abstracts 1964-1979.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, November 1980. 82 pages. $10.00 postpaid.

References are categorized in the following topical areas: *Adverse Effects* on Aquatic Species, Terrestrial Species and Vegetation; *Methods of Disposal* including burial, injection, landfill, spray and water; *Radioactive Waste Disposal; Environmental Impact* including analysis, monitoring, identification, environmental contamination and transport; *Health Effects* including biological studies, toxicity, tissue accumulation and mortality data for aquatic and terrestrial animals.

**NLM/TIRC-80/4 HEALTH ASPECTS OF UREA/FORMALDEHYDE COMPOUNDS.** *A selected bibliography with abstracts 1963-1980.* N. P. Drago, J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, December 1980. 52 pages. $7.50 postpaid.

Each of the 134 references contains a citation in alphabetical order by author and an abstract where available. A title index is also provided. A number of the references (44%) pertain to urea-formaldehyde compounds used in home insulation and in the fabrication of construction materials.

**NLM/TIRC-81/1 TOXICITY OF VANADIUM COMPOUNDS.** *A Bibliography with Abstracts 1965-1980.* N. S. Dailey, S. A. Mashburn and S. G. Winslow, Toxicology Information Response Center, July 1981. 100 pages. $15.00 postpaid.

This report was produced primarily because of concern for the effects of potential exposure to vanadium compounds associated with synthetic fuel processes. The 261 references each contain a citation as well as an abstract where available. A title index and chemical name index are also provided.

**NLM/TIRC-81/2. THE EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE IMMUNE SYSTEM.** *A selected bibliography with Abstracts, 1969-1980.* By S. G. Winslow, TIRC, Oak Ridge National Laboratory. November 1981, 78 pages, $10.00 postpaid.

The report contains 216 references, each containing a citation (in alphabetic order by author), an abstract (where available), chemical name(s), and species used. Several indices (chemical name, species, and title) are provided. Sources searched included ten DIALOG$^{R}$ files plus MEDLINE and TOXLINE.

**NLM/TIRC-82/1. HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM.** *A selected bibliography with Abstracts, 1963-1981.* By J. G. Pruett and S. G. Winslow. Toxicology Information Response Center, October 1982. 62 pages. $10.00 postpaid.

The report contains 305 reference, including citations on occupational or inadvertent (environmental) exposure to chemicals. Each listing contains a citation, an abstract (where available), chemical name(s) (if specified), and keywords. Information concerning current research projects and reviews are in separate sections at the end of the bibliography. A total of ten DIALOG$^{R}$ and MEDLARS$^{R}$ sources were searched.

- - - - - - - - - - - - - - - - - - - - - - - - - -

**ORDER FORM –**
**NLM/TIRC ANNOTATED BIBLIOGRAPHIES**

| | | |
|---|---|---|
| ☐ | NLM/TIRC 80/1 Health and Environmental Effects of Acid Rain | $15.00 |
| ☐ | NLM/TIRC 80/2 Asbestos in Air | $ 7.00 |
| ☐ | NLM/TIRC 80/3 Chemical Wast Disposal | $10.00 |
| ☐ | NLM/TIRC 80/4 Health Aspects Urea/Formaldehyde Compounds | $ 7.50 |
| ☐ | NLM/TIRC 81/1 Toxicity of Vanadium Compounds | $15.00 |
| ☐ | NLM/TIRC 81/2 The Effects of Environmental Chemicals on the Immune System | $10.00 |
| ☐ | NLM/TIRC 82/1 Health Effects of Environmental Chemicals on the Adult Reproductive System | $10.00 |

Send your check or purchase order to: F.A.S.E.B. Special Publications, 9650 Rockville Pike, Bethesda, MD 20814

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

| | |
|---|---|
| SUPPORTING ORGANIZATION: National Institute for Occupational Safety and Health | SUPPORTING ORGANIZATION NUMBER(S): Contract No: and/or Control No: VMO Byy 627 |
| PROJECT TITLE: The Sentinel Health Event (Occupational) | |
| INVESTIGATOR(S): Robert Mullan | DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION: Division of Surveillance, Hazard Evaluations, and Field Studies |
| PERFORMING ORGANIZATION: Name and Address, Including Zip Code: National Institute for Occupational Safety and Health<br>4676 Columbia Parkway<br>Cincinnati, Ohio 45226 | PERIOD FOR THIS NRP: Start Date: October 1982<br>End Date: March 1984<br>Annual Funding: |

PROJECT SUMMARY:

The purpose of this project is the development and implementation of the Sentinel Health Event (Occupational) concept. A Sentinel Health Event is a disease, disability, or untimely death which is occupationally related and whose occurrence may serve as a warning signal that materials substitution, control measures, or personal protection may be required. During FY '82 a comprehensive list of these events was prepared by analysis of the literature and peer review. The SHE(O) list serves as a cogent occupational health surveillance and educational framework that may be used in multiple settings (NIOSH and other Federal agencies, e.g., NCHS and SSA, state agencies, industry, labor, academia, and medical care providers and intermediaries, e.g., insurance companies). The principal objectives of this project are twofold:

1. To explore the utility of the SHE(O) concept in a surveillance setting via its application to vital statistics obtained from SCANS states.
2. To assess the utility of the SHE(O) concept in medical school curricula as a means of promoting occupational health education.

Application of the SHE(O) concept will (a) promote NIOSH's goal to heighten medical care provider awareness of the importance of occupationally related death, disease, and disability, (b) promote occupational health surveillance at the state level by assisting states in developing surveillance methods based on the SHE(O) concept, and (c) assist NIOSH's mission of identifying and prioritizing areas of occupational health concerns where further investigation may be needed.

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Goldberg ED
The surveillance of coastal marine waters with bivalves - the mussel watch.
In: Analytical Techniques in Environmental Chemistry. Albaiges, J., ed. (Pergamon Press: Oxford): 3: 373-386 1980 (4 References)

Sonstegard RA ; Leatherland JF
Aquatic organism pathobiology as a sentinel system to monitor environmental carcinogens.
Environ. Sci. Res. 16: 513-520 1980 (40 References)

Sonstegard RA
STUDIES OF THE ETIOLOGY AND EPIZOOTIOLOGY OF NEOPLASIA IN FISHES
Toxicology Research Projects Directory, Vol.04 iss.10 1979
Epidemiology Research Projects Directory, 1979

Goldberg ED
MUSSEL WATCH--EXTENSION TO HISTORICAL RECORDS AND THE NOVEL POLLUTANTS
Toxicology Research Projects Directory, Vol.05 iss.08 1980

SMOLENSKY MH ; REINBERG A ; PREVOST RJ ; MCGOVERN JP ; GERVAIS P
THE APPLICATION OF CHRONOBIOLOGICAL FINDINGS AND METHODS TO THE EPIDEMIOLOGICAL INVESTIGATION OF THE HEALTH EFFECTS OF AIR POLLUTANTS ON SENTINEL PATIENTS
SMOLENSKY, M. H., A. REINBERG AND J. P. MCGOVERN (ED.). ADVANCES IN THE BIOSCIENCES, VOL. 28. RECENT ADVANCES IN THE CHRONOBIOLOGY OF ALLERGY AND IMMUNOLOGY; 10TH INTERNATIONAL CONGRESS OF ALLERGOLOGY, JERUSALEM, ISRAEL, NOV. 11, 1979. IX+358P. PERGAMON PRESS: OXFORD, ENGLAND; NEW YORK, N.Y., USA. ILLUS. ISBN 0-08-025891-3.; 0 (0). 1980 (RECD. 1981). P211-236.

Sonstegard RA
AN ECOLOGICAL APPROACH TO ENVIRONMENTAL CANCER
Toxicology Research Projects Directory, Vol.05 iss.11 1980
Epidemiology Research Projects Directory, 1980

Frazier TM ; Wegman DH
Exploring the use of death certificates as a component of an occupational health surveillance system.
Am J Public Health; VOL 69, ISS 7, 1979, P718-20

HAYES H M JR ; HOOVER R ; TARONE RE
Bladder cancer in pet dogs: A sentinel for environmental cancer?
AM J EPIDEMIOL; 114 (2). 1981. 229-233.

Goldberg ED
NATIONAL MARINE POLLUTION MONITORING PROGRAM
Toxicology Research Projects Directory, Vol.05 iss.02 1980

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Institute for Occupational Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: VMH Myy 572

PROJECT TITLE:
Investigation of Workers Exposed to 4,4'-Methylenebis(2-chloroaniline) (MOCA)

INVESTIGATOR(S):
Elizabeth Ward

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance, Hazard Evaluations, and Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: September 1985
Annual Funding:

PROJECT SUMMARY:

4'4-Methylenebis (2-chloroaniline)(MOCA) has been shown to be a potent carcinogen in animal studies and is structurally similar to aromatic amines, such as benzidine, known to cause bladder cancer in occupationally exposed workers. No adequate epidemiologic studies have examined MOCA's carcinogenicity in humans. At present, there is no OSHA standard for MOCA. MOCA is used as a curing agent for isocyanate containing polymers. About 33,000 U.S. workers are currently exposed, most in workplaces where 10 or fewer employees work directly with the substance.

We have proposed to establish a registry of workers exposed to MOCA at the two U.S. production facilities: the Anderson Development Company (ADC) in Adrian, Michigan, and E.I. duPont de Nemours and Company in Deepwater, New Jersey. The registry will be used for prospective surveillance of cancer incidence and mortality. Cancer incidence will be determined by notification of the cohort and mailed questionnaire.

Personnel records of the ADC company for the period of MOCA production (1968-1980) were obtained in December 1981. Records of approximately 540 individuals have been computerized using the PVC format. Social Security 941 forms have been obtained to validate the cohort, and IRS has provided current addresses. We have conducted a preliminary discussion with duPont regarding access to their records which pertain to 203 employees exposed to MOCA from 1955 to 1971. In FY'83, we plan to complete mortality follow-up of the ADC cohort and to obtain records of the duPont cohort. In FY'84, we plan to notify both cohorts that they are enrolled in the registry and to obtain data on cancer incidence by questionaire and, where necessary, telephone follow-up.

CAS Registry No.
4,4'-Methylenebis(2-chloroaniline)
(MOCA) 101-14-4

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Goutet P
4,4'-Methylenebis[2-chloroaniline]. Toxicological hazards and exposure at work
Cah. Notes Doc.; VOL 104,, 1981,387-93

Salamone MF
Toxicity of 41 carcinogens and noncarcinogenic analogs
Prog. Mutat. Res.; VOL 1, ISS Eval. Short-Term Tests Carcinog.: Rep. Int. Collab. Program, 1981,682-5

Gunter BJ
Health Hazard Evaluation Determination Report No. 77-125-547, Amphenol Cadre, Longmont, Colorado
Govt Reports Announcements & Index (GRA&I), Issue 09, 1981

Morrow RW ; Hamilton JH
MOCA Permeation of Protective Clothing
Govt Reports Announcements & Index (GRA&I), Issue 15, 1980

Farmer PB ; Rickard J ; Robertson S
The metabolism and distribution of 4,4'-methylenebis(2-chloroaniline) (MBOCA) in rats
JAT, J. Appl. Toxicol.; VOL 1, ISS 6, 1981,317-22

Dunkel VC ; Pienta RJ ; Sivak A ; Traul KA
Comparative neoplastic transformation responses of Balb/3T3 cells, Syrian hamster embryo cells, and Rauscher murine leukemia virus-infected Fischer 344 rat embryo cells to chemical carcinogens
JNCI, J. Natl. Cancer Inst.; VOL 67, ISS 6, 1981,1303-15

INT AGENCY RES CANCER
WHO INTERNATIONAL AGENCY FOR RESEARCH ON CANCER MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS VOL. 1-20 SUPPLEMENT 1. CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS LYON FRANCE JAN. 15-17 1979
WHO. IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER) MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS, VOLS. 1-20, SUPPL. 1. CHEMICALS AND INDUSTRIAL PROCESSES ASSOCIATED WITH CANCER IN HUMANS; LYON, FRANCE, JAN. 15-17, 1979. XI+71P. WHO: GENEVA, SWITZERLAND. PAPER. ISBN 92-832-1402-1.; 0 (0). 1979 (RECD. 1980). XI+71P.

Kommineni C ; Groth DH ; Frockt IJ ; Voelker RW ; Stanovick RP
Determination of the tumorigenic potential of methylene-bis-orthochloroaniline
J. Environ. Pathol. Toxicol.; VOL 2, ISS 5, 1979,149-71

BENJAMIN T ; EVARTS RP ; REDDY TV ; WEISBURGER EK
Effect of 2,2'-diaminodiphenyldisulfide, a resin hardener, on rats.
J TOXICOL ENVIRON HEALTH; 7 (1). 1981. 69-82.

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Institute for Occupational
Safety and Health

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** VMH Myy 575

**PROJECT TITLE:**
Case Control Study of Bladder Cancer in Hamilton County, Ohio

**INVESTIGATOR(S):**
Kyle Steenland

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Division of Surveillance,
Hazard Evaluations, and
Field Studies

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.**
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

**PERIOD FOR THIS NRP:**
**Start Date:** October 1982
**End Date:** December 1984
**Annual Funding:**

**PROJECT SUMMARY:**

This study attempts to use a new methodology, the use of the city directories, to ascertain occupation. We will collect cases of deaths from bladder cancer in Hamilton County, Ohio. Controls will be deaths from causes other than bladder cancer matched on year of death, age, and race. City directories should provide a complete occupational history for most of our cases and controls. Hamilton County has traditionally had excessively high bladder cancer mortality.

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Anon
Walk-Through Survey at the Sherwin-Williams Company, Chemicals
Division, Cincinnati, OH
Govt Reports Announcements & Index (GRA&I), Issue 11, 1982

Vineis P
Industrial bladder cancer [letter]
Br Med J [Clin Res]; VOL 285, ISS 6337, 1982, P295

Parkes HG ; Veys CA ; Waterhouse JA ; Peters A
Cancer mortality in the British rubber industry.
Br J Ind Med; VOL 39, ISS 3, 1982, P209-20

Boeniger M ; Stern F ; Nicholson W
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PRINTING TRADES
Toxicology Research Projects Directory, Vol.04 iss.10 1979
Epidemiology Research Projects Directory, 1979

Fajen J ; Egan B
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF LEATHER INDUSTRY WORKERS
Toxicology Research Projects Directory, Vol.04 iss.09 1979
Epidemiology Research Projects Directory, 1979

Miller AB ; Howe GR ; Burch JD ; Steele R ; Hill GB
EPIDEMIOLOGICAL STUDY OF BLADDER CANCER
Epidemiology Research Projects Directory, 1981

Robinson C
COHORT STUDY OF AUTOMOTIVE WOOD DIE AND MODEL MAKERS
Toxicology Research Projects Directory, Vol.06 iss.05 1981
Epidemiology Research Projects Directory, 1981

Boeniger M
EXPOSURE CHARACTERIZATION OF AZO DYES
Toxicology Research Projects Directory, Vol.06 iss.05 1981

Greathouse DG ; Michael G ; Kraemer D
COMPARE OCCURRENCE AND LEVELS OF DRINKING WATER CONSTITUENTS
AMONG 12 MATCHED PAIRS OF HIGH AND LOW CANCER MORTALITY COUNTIES
(ABBREV)
Toxicology Research Projects Directory, Vol.05 iss.12 1980
Epidemiology Research Projects Directory, 1980

Canter K ; Hoover R
EPIDEMIOLOGIC STUDY OF BLADDER CANCER RISK ASSOCIATED WITH
TRIHALOMETHANES IN DRINKING WATER
Toxicology Research Projects Directory, Vol.05 iss.11 1980
Epidemiology Research Projects Directory, 1980

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Institute for Occupational Safety and Health

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** VMH Ayy 586

**PROJECT TITLE:**
Cytogenetic Assays and Analysis of Occupational Populations

**INVESTIGATOR(S):**
Theodore Meinhardt

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Division of Surveillance, Hazard Evaluations, and Field Studies

**PERFORMING ORGANIZATION:**
**Name and Address. Including Zip Code.**
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

**PERIOD FOR THIS NRP:**
**Start Date:** October 1982
**End Date:** September 1986
**Annual Funding:**

**PROJECT SUMMARY:**

The purpose of this project is to evaluate the potential of a chemical or physical agent, known or suspected of being a carcinogen, to produce chromosomal changes in occupationally exposed populations. These changes are used as an indication of biologic activity which can be translated to a dose-response curve over the range of occupational exposures. Two different assays, chromosomal aberrations (CA) and sister chromatid exchanges (SCE), will be used to conduct these evaluations. Currently, the cytogenetic effects of exposure to ethylene oxide (EtO) is being investigated based on a hazard evaluation request from the Oil, Chemical, and Atomic Workers Union. EtO has been shown to be mutagenic in submammalia tests systems, carcinogenic in animal bioassays, and a potential human carcinogen in two weak epidemiologic studies and producer of cytogenetic changes at higher levels of exposure. The study of EtO is underway and at least one additional cytogenetic study, and possibly a second, will be initiated during the year. Other occupational environments which are being considered for cytogenetics are those that involve exposure to radiation from depleted uranium and to exposure to ethylene dibromide. Both of these exposures are known to be carcinogenic in certain nonhuman test systems or to be carcinogenic to humans in specific occupational settings.

To conduct the research, NIOSH needs to have the capability of having cytogenetic assays performed on the blood samples from exposed and nonexposed workers as well as expertise in the appropriate analyses of these data. This capability has been acquired through an interagency agreement between NIOSH and the Department of Energy's Lawrence Livermore National Laboratories Biomedical Division where Dr. Anthony V. Carrano is overseeing such work.

CAS Registry No.
Ethylene oxide 75-21-8

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Thiess AM ; Frentzel Beyme RR ; Link R ; Stocker W
MORTALITY AND MORBIDITY SURVEY OF OCCUPATIONAL RISK OF ETHYLENE AND PROPYLENE OXIDE IN CHEMICAL PRODUCTION AT BASF, LUDWIGSHAFEN, GERMANY
Epidemiology Research Projects Directory, 1980

Anonymous
Ethylene oxide.
In: Hazardous and Toxic Effects of Industrial Chemicals. Sittig, M., ed. (Noyes Data Corp.: NJ): pp. 208-210 1979 (14 References)

WHO
Chemicals and industrial processes associated with cancer in humans.
IARC Monogr. Eval. Carcinog. Risk. Chem. (1): 71-71 1979 (25 References)

Ehrenberg L
Risk assessment of ethylene oxide and other compounds.
Cold Spring Harbor Symp. Ser., Banbury Rep. 1:157-190 1979

Lambert B ; Lindblad A
Sister chromatid exchange and chromosome aberrations in lymphocytes of laboratory personnel.
J Toxicol Environ Health; VOL 6, ISS 5-6, 1980, P1237-43

Star EG
[Mutagenic and cytotoxic effect of ethylene oxide on human cell cultures (author's transl)]
Zentralbl Bakteriol [B]; VOL 170, ISS 5-6, 1980, P548-56

WOLMAN SR
Mutational consequences of exposure to ethylene oxide.
J ENVIRON PATHOL TOXICOL; 2 (6). 1979 (RECD. 1980). 1289-1304.

HOGSTEDT C ; ROHLEN O ; BERNDTSSON BS ; AXELSON O ; EHRENBERG L
A cohort study of mortality and cancer incidence in ethylene oxide production workers.
BR J IND MED; 36 (4). 1979 (RECD. 1980). 276-280.

Anonymous
Has any recent research shown ethylene or ethylene oxide to be carcinogenic? If so, in what concentrations?
Br. Med. J. 1(6172): 1194 1979

GLASER ZR
ETHYLENE OXIDE:TOXICOLOGY REVIEW AND FIELD STUDY RESULTS OF HOSPITAL USE
J ENVIRON PATH TOXICOL; 2:173-208,1979

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

SUPPORTING ORGANIZATION:
National Institute for Occupational Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: VMH Myy 588

PROJECT TITLE:
Update of Completed Cohort Mortality Studies

INVESTIGATOR(S):
David Brown

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Division of Surveillance, Hazard Evaluations, and Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code:
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: September 1985
Annual Funding:

PROJECT SUMMARY:

NIOSH has completed a number of retrospective cohort mortality studies during the past few years, many of which lacked conclusive results. The primary reasons for inconclusive results are too few deaths (low statistical power) and a short follow-up period (resulting in a short latency period). Thus, many of the original hypotheses that were tested by these studies remained unresolved questions. Examples of such studies include workers exposed to PCB's, perchloroethylene,chlorinated hydrocarbon pesticides, and styrene butadiene rubber. It is proposed that these cohorts ( and others determined to be appropriate) be followed through 1980, that the additional death information be added to the file, and that the analyses be rerun.

The selected study populations will be sent to the Social Security Administration (SSA) which currently will provide information to allow follow-up through 1978. Those that SSA cannot locate (lost to follow-up) will be sent to IRS and other follow-up sources in order to determine the vital status of at least 95% of the cohort. Follow-up for 1979-1980 will be accomplished via the National Death Index (NDI) which is maintained by the National Center for Health Statistics (NCHS).

The updating of studies will provide more valid results which will in turn allow NIOSH to make better recommendations regarding the potential carcinogenic risk to workers.

CAS Registry No.
Perchloroethylene 127-18-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Barthel E
Increased risk of lung cancer in pesticide-exposed male
agricultural workers.
J Toxicol Environ Health; VOL 8, ISS 5-6, 1981, P1027-40

Ditraglia D ; Brown DP ; Namekata T ; Iverson N
Mortality study of workers employed at organochlorine pesticide
manufacturing plants.
Scand J Work Environ Health; VOL 7 Suppl 4, 1981, P140-6

Smith A
MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDY OF WORKERS
EXPOSED TO PCBS
Toxicology Research Projects Directory, Vol.06 iss.11 1981
Epidemiology Research Projects Directory, 1981

Symons MJ ; Andjelkovich DA ; Spirtas R ; Herman DR
Brain and central nervous system cancer mortality in U. S. rubber
workers.
Ann NY Acad Sci; VOL 381, 1982, P146-59

Kaplan SD
Dry Cleaners Workers Exposed to Perchloroethylene: A
Retrospective Cohort Mortality Study
Govt Reports Announcements & Index (GRA&I), Issue 24, 1981

Parkes HG ; Veys CA ; Waterhouse JA ; Peters A
Cancer mortality in the British rubber industry.
Br J Ind Med; VOL 39, ISS 3, 1982, P209-20

BLAIR A
Mortality among workers in the metal polishing and plating
industry, 1951-1969.
J OCCUP MED; 22 (3). 1980. 158-162.

BROWN DP ; JONES M
Mortality and industrial hygiene study of workers exposed to
polychlorinated biphenyls.
ARCH ENVIRON HEALTH; 36 (3). 1981. 120-129.

Blair AE ; Grauman DJ
MORTALITY AMONG DRY CLEANERS
Toxicology Research Projects Directory, Vol.06 iss.12 1981
Epidemiology Research Projects Directory, 1981

Maclure KM ; Macmahon B
An epidemiologic perspective of environmental carcinogenesis.
Epidemiol. Rev. 2: 19-48 1980 (281 References)

Delzell E ; Monson RR
Mortality among rubber workers: V. processing workers.
J Occup Med; VOL 24, ISS 7, 1982, P539-45

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. C60720B
NCI No. 10203-G

PROJECT TITLE:
Tests for Toxicologic and Carcinogenic Effects: Status of Methdilazine

INVESTIGATOR(S):
For further information, contact

Dr. D. Goldman

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, Maryland 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Before instituting the chronic test phase, methdilazine, used in pharmaceuticals, was found to be unstable in feed. Plans now call for administration by gavage during chronic testing. The change became effective during April 1982. (See TOX-TIPS, May 1982, 72-31).

CAS Registry No.
Methdilazine 1982-37-2

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Lance JW ; Anthony M
A comparative trial of serotonin antagonists in the management of migraine.
Proc Aust Assoc Neurol; VOL 7, 1970, P31-5

Lance JW ; Anthony M ; Somerville B
Comparative trial of serotonin antagonists in the management of migraine.
Br Med J; VOL 1, ISS 705, 1970, P327-30

Ljunggren B ; Moller H
Phenothiazine phototoxicity: an experimental study on chlorpromazine and related tricyclic drugs
Acta Derm.-Venereol.; VOL 57, ISS 4, 1977,325-9

ZUSKIN E ; VALIC F ; BOUHUYS A
Byssinosis and airway responses due to exposure to textile dust.
LUNG; 154 (1). 1976 (RECD 1977) 17-24

Tait B
Effects of some phenothiazines, tricyclic antidepressants, and antihistamines on red cell agglutination
J. Pharm., Pharmacol.; VOL 22, ISS 10, 1970,738-44

BORIS A ; TRMAL T ; NELSON E
EFFECTS OF SOME PHENOTHIAZINES ON UNILATERAL OVARIAN COMPENSATORY HYPERTROPHY IN THE RAT
ARCH. INT. PHARMACODYN. THER.; VOL 182, ISS 1, 1969,241-50

BROWN JH ; MACKEY HK ; RIGGILO DA ; SCHWARTZ NL
ACUTE INFLAMMATORY RESPONSE. II. INFLUENCE OF ANTIHISTAMINICS AND CATECHOL AMINES ON FORMALDEHYDE-INDUCED EDEMA
J. PHARMACOL. EXP. THER.; VOL 160, ISS 1, 1968,243-8

SINGH KP ; SHARMA VN ; RATHORE DS
PHARMACOLOGICAL ACTIONS OF SOME RECENTLY SYNTHESIZED PHENOTHIAZINE DERIVATIVES
INDIAN J. MED. RES.; VOL 55, ISS 8, 1967,889-95

SHARMA VN ; SINGH KP ; RATHORE DS
CENTRAL NERVOUS SYSTEM ACTIONS OF SOME PHENOTHIAZINE DERIVATIVES
INDIAN J. MED. RES.; VOL 55, ISS 8, 1967,897-903

HERRMANN RG ; FRANK JD
EFFECT OF ADENOSINE DERIVATIVES AND ANTIHISTAMINICS ON PLATELET AGGREGATION
PROC. SOC. EXP. BIOL. MED.; VOL 123, ISS 3, 1966,654-60

FEHER PJ ; KALZ F
VASCULAR PERMEABILITY OF HUMAN SKIN BRADYKININ
DERMATOLOGICA; VOL 133, ISS 3, 1966,190-204

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10162-V
NCI No. C55845

PROJECT TITLE:
Status of p-Quinone

INVESTIGATOR(S):
Dr. C. Grieshaber

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Chemical Manager
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, Maryland 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Plans for chronic testing of p-Quinone have been cancelled as of April 1982. An alternate class member was selected.

CAS Registry No.
p-Quinone 106-51-4

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

TREVORS JT ; BASARABA J
TOXICITY OF BENZO QUINONE AND HYDRO QUINONE IN SHORT-TERM
BACTERIAL BIOASSAYS
BULL ENVIRON CONTAM TOXICOL; 25 (4). 1980. 672-675.

Prakash G
Methods of drug design applied to benzoquinone analogs and their
activities against ascitic sarcoma 180 in Swiss mice
Diss. Abstr. Int. B 1980, 40 (12, Pt. 1), 5687-8; 1979,106 pp.

Grieshaber CK
CARCINOGENESIS BIOASSAY OF P-QUINONE
Toxicology Research Projects Directory, Vol.06 iss.03 1981

Health and safety data reporting; submission of lists and copies
of health and safety studies
Fed. Regist.; VOL 47, ISS 171, 1982,38780-99

LUEERS H ; OBE G
ON THE POSSIBLE MUTAGENIC ACTIVITY OF P-BENZOQUINONE
MUTAT RES; 15:77-80,1972

OBE G
THE ACTION OF ETHYLENIMINES ON THE CHROMOSOMES OF VICIA FABA
MUTAT RES; 13:421-424,1971

LUEERS H ; ROEHRBORN G
MUTAGENIC ACTIVITY OF ETHYLENIMINO DERIVATIVES WITH DIFFERENT
NUMBERS OF REACTIVE GROUPS
GENET TODAY PROC INT CONGR 11TH; 1:64-65,1963

LEVAN A ; TJIO JH
INDUCTION OF CHROMOSOME FRAGMENTATION BY PHENOLS
HEREDITAS; 34:453-484,1948

REISSIG JL
INDUCTION OF FORWARD MUTANTS IN THE PYR-3 REGION OF NEUROSPORA
J GEN MICROBIOL; 30:317-325,1963

LUEERS H ; ROEHRBORN G
CHEMICAL CONSTITUTION AND MUTAGENIC ACTION. 3.ETHYLENIMINES
MUTAT RES; 2:29-44,1965

KROGULEVICH RE ; STOM DS
EFFECTS OF QUINOID AND PHENOLIC ANALOGS OF RADIOTOXINS ON THE
CHROMOSOME APPARATUS
RADIOBIOLOGY(USSR); 9(4):241-247,1969
(TRANSLATED FROM RADIOBIOLOGIYA 9:644-647,1969)

ROEHRBORN G ; VOGEL F
CHEMICALLY INDUCED MUTATIONS IN MAMMALS AND MAN. 2.GENETIC
STUDIES IN THE MOUSE
DTSCH MED WOCHENSCHR; 92:2315-2321,1967

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

Chemical Manufacturers Association (CMA)
2501 M Street, N.W.
Washington, D.C. 20037

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No:**
**and/or**
**Control No:**

**PROJECT TITLE:**

CMA Biomedical and Environmental Special Program: Arsenic

**INVESTIGATOR(S):**

For further information, contact

Chemical Manufacturers Association
Biomedical and Environmental Special Programs Division

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Telephone (202) 887-1100

**PERFORMING ORGANIZATION:**

**Name and Address.**
**Including Zip Code.**

**PERIOD FOR THIS NRP:**

**Start Date:**

**End Date:**

**Annual Funding:**

**PROJECT SUMMARY:**

For chemicals widely manufactured by industry, some companies jointly sponsor research to avoid duplication and to pool resources. CMA's Biomedical and Environmental Special Programs Division is a vehicle for many of these collaborative efforts. New developments from the Special Programs Panels in FY 1981-1982 were reported in CHEMECOLOGY, November 1982. The following information was included on page 6 of this CMA publication:

> Arsenic - Partial analysis of data from a human epidemiologcal exposure study indicates that there may be a level below which exposure to arsenic does not cause lung cancer. Preliminary analyses show that exposure to very high levels of arsenic, rather than cumulative low-level exposures over a long period of time, could be linked to excess cancer rates in humans.
>
> CMA will sponsor analyses of all the study data.

CAS Registry No.
Arsenic 7440-38-2

TOX-TIPS NOVEMBER 1982 78-29

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

PERSHAGEN G
THE CARCINOGENICITY OF ARSENIC
MEETING ON THE ROLE OF METALS IN CARCINOGENESIS, ATLANTA, GA., USA, MARCH 24-28, 1980. ENVIRON HEALTH PERSPECT; 40 (0). 1981. 93-100.

NORDBERG GF ; ANDERSEN O
METAL INTERACTIONS IN CARCINOGENESIS ENHANCEMENT INHIBITION
MEETING ON THE ROLE OF METALS IN CARCINOGENESIS, ATLANTA, GA., USA, MARCH 24-28, 1980. ENVIRON HEALTH PERSPECT; 40 (0). 1981. 65-82.

BALINA LM ; VALDEZ RP ; COSTA CORDOVA H ; CHOUELA E ; KIEN MC AGUERO MT
Arsenic and its complications.
REV ARGENT DERMATOL; 62 (APRIL-JUNE). 1981. 169-175.

Frank AL
The epidemiology and etiology of lung cancer.
Clin Chest Med; VOL 3, ISS 2, 1982, P219-28 (REF: 84)

Rom WN ; Varley G ; Lyon JL ; Shopkow S
Lung cancer mortality among residents living near the El Paso smelter.
Br J Ind Med; VOL 39, ISS 3, 1982, P269-72

Cuzick J ; Evans S ; Gillman M ; Price Evans DA
Medicinal arsenic and internal malignancies.
Br J Cancer; VOL 45, ISS 6, 1982, P904-11

PERSHAGEN G ; WALL S ; TAUBE A ; LINNMAN L
On the interaction between occupational arsenic exposure and smoking and its relationship to lung cancer.
SCAND J WORK ENVIRON HEALTH; 7 (4). 1981 (RECD. 1982). 302-309.

VAINIO H ; SORSA M ; RANTANEN J ; HEMMINKI K ; AITIO A
Biological monitoring in the identification of the cancer risk of individuals exposed to chemical carcinogens.
SCAND J WORK ENVIRON HEALTH; 7 (4). 1981 (RECD. 1982). 241-251.

BARTHEL E
Cancer risk in pesticide exposed agricultural workers.
ARCH GESCHWULSTFORSCH; 51 (7). 1981. 579-585.

Pershagen G
The carcinogenicity of arsenic
Proc. Workshop/Conf. Role Met. Carcinog.; ISS PB82-160524, 1980,299-337

Castro JA
Carcinogenic, mutagenic and teratogenic effects of arsenic
Acta Bioquim. Clin. Latinoam.; VOL 16, ISS 1, 1982,3-17

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

SUPPORTING ORGANIZATION:

Chemical Manufacturers Association (CMA)
2501 M Street, N.W.
Washington, D.C. 20037

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

CMA Biomedical and Environmental Special Program: Benzene

INVESTIGATOR(S):

For further information, contact

Chemical Manufacturers Association
Biomedical and Environmental Special Programs Division

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

Telephone (202) 887-1100

PERFORMING ORGANIZATION:

Name and Address,
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

For chemicals widely manufactured by industry, some companies jointly sponsor research to avoid duplication and to pool resources. CMA's Biomedical and Environmental Special Programs Division is a vehicle for many of these collaborative efforts. New developments from the Special Programs Panels in FY 1981-1982 were reported in CHEMECOLOGY, November 1982. The following information was included on page 6 of this CMA publication:

> Benzene - A study that will compare causes of death in a group of workers who were exposed to benzene for many years with mortality of a comparable unexposed group is underway and will be completed in 1983. Ten thousand workers drawn from seven plants are under study.
>
> The study will look for evidence of any adverse health effects from benzene exposure, and is particularly concerned about leukemia incidence. Benzene is suspected to cause cancer when breathed in high concentrations.

CAS Registry No.
Benzene 71-43-2

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following Nationa Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the mos recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Rosenstock L
Leukemia and benzene [editorial]
Ann Intern Med; VOL 97, ISS 2, 1982, P275-6

Rinsky RA ; Young RJ ; Smith AB
Leukemia in benzene workers.
Am J Industr Med; VOL 2, ISS 3, 1981, P217-45

Aksoy MB ; Erdem S ; Dincol G
BENZENE AND MALIGNANCIES
Toxicology Research Projects Directory, Vol.07 iss.01 1981

O'Berg MT
EPIDEMIOLOGICAL STUDY OF WORKERS EXPOSED TO BENZENE
Toxicology Research Projects Directory, Vol.06 iss.12 1981
Epidemiology Research Projects Directory, 1981

RUSHTON L ; ALDERSON MR
A case-control study to investigate the association between exposure to benzene and deaths from leukemia in oil refinery workers.
BR J CANCER; 43 (1). 1981. 77-84.

Linet MS ; Bailey PE
Benzene, leukemia, and the Supreme Court.
J Public Health Policy; VOL 2, ISS 2, 1981, P116-35

Cao JN
[Leukemia in benzene workers (report of 3 cases) (author's transl)]
Chung Hua Yu Fang I Hsueh Tsa Chih; VOL 13, ISS 4, 1979, P226-8

Fiere D ; Prost G
[Benzene-origin leukemias (letter)]
Nouv Presse Med; VOL 8, ISS 41, 1979, P3360-1

O'Berg MT
EPIDEMIOLOGICAL STUDY OF WORKERS EXPOSED TO BENZENE
Epidemiology Research Projects Directory, 1981

Aksoy MB ; Erdem S ; Dincol G
LEUKEMIA INCIDENCE AMONG WORKERS EXPOSED TO BENZENE
Epidemiology Research Projects Directory, 1980

Aksoy MB ; Erdem S ; Koray DA ; Guencag D
AN EPIDEMIOLOGICAL STUDY OF LEUKEMIA INDUCED BY EXPOSURE TO DIFFERENT CHEMICALS
Epidemiology Research Projects Directory, 1980

# INDEX OF COMPOUNDS

Arsenic
  Human - epidemiology...78:29
Benzene
  Human - workplace exposure - epidemiology...78:31
Bladder carcinogens
  Human - workplace exposure - carcinogenicity...78:19
Ethylene oxide
  Human - workplace exposure - epidemiology...78:21
Methdilazine
  Mouse - gavage - long-term - carcinogenicity...78:25
  Rat - gavage - long-term - carcinogenicity...78:25
4,4'-Methylenebis(2-chloroaniline)(MOCA)
  Human - workplace exposure - carcinogenicity...78:17
Occupational chemical hazards
  Human - workplace exposure - epidemiology...78:15
Perchloroethylene
  Human - workplace exposure - epidemiology...78:23
p-Quinone
  Long-term - carcinogenicity...78:27

## Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11, 77:31
50-34-0 Propantheline bromide...74:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13
54-31-9 Furosemide...62:17
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-41-0 Dephenylhydantoin(phenytoin)...76:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
60-87-7 Promethazine...73:31
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9, 72:27
69-09-0 Chlorpromazine hydrochloride...77:21
71-43-2 Benzene...55:25, 67:7, 78:31
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-21-8 Ethylene oxide...78:21
75-38-7 Vinylidene fluoride...68:35
75-44-5 Phosgene...73:29
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-06-1 Acrylamide...55:21, 55:23
79-11-8 Chloroacetic acid...57:19
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5

81-49-2 1-Amino-2,4-dibromoanthraquinone...64:33
81-55-0 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19
83-79-4 Rotenone...59:21
84-66-2 Diethyl phthalate...77:25
87-62-7 2,6-Xylidine...56:29, 59:13
87-86-5 Pentachlorophenol...66:5
89-63-4 4-Chloro-2-nitroaniline...70:27
91-20-3 Naphthalene...69:7
91-23-6 o-Nitroanisole...73:25
91-64-5 Coumarin...57:27
91-79-2 Thenyldiamine (Pharmaceutical)...64:9
91-80-5 Methapyrilene...64:15
91-81-6 Tripelenamine...64:7
91-84-9 Pyrilamine...64:11
92-48-8 6-Methylcoumarin...57:23
93-76-5 2,4,5-T...66:5
94-66-2 Diethyl phthalate...57:31
94-75-7 2,4-D...66:5
95-50-1 1,2-Dichlorobenzene...55:31
95-86-3 2,4-Diaminophenol...64:25
95-95-4 2,4,5-Trichlorophenol...68:33
96-09-3 Styrene oxide...65:17
96-18-4 1,2,3-Trichloropropane...74:21
96-45-7 Ethylenethiourea...76:25
98-00-0 Furfuryl alcohol...77:33
98-01-0 Furfural...77:13
98-85-1 alpha-Methylbenzyl alcohol...61:23
98-95-3 Nitrobenzene...71:29
100-01-6 p-Nitroaniline...73:23
100-02-7 p-Nitrophenol...65:13
100-40-3 4-Vinylcyclohexene...57:9
100-41-4 Ethylbenzene...69:21
100-42-5 Styrene...55:27
100-44-7 Benzyl chloride...65:5
100-52-7 Benzaldehyde..76:19
101-14-4 4,4'-Methylenebis(2-chloroaniline) (MOCA)
101-68-8 4,4'-Diphenylmethane diisocyanate...77:27
101-90-6 Diglycidyl resorcinol ether...63:9
101-77-9 4,4'-Methylenedianiline...63:13
103-90-2 4-Hydroxyacetanilide...57:25
104-55-2 Cinnamaldehyde...64:27
106-46-7 1,4-Dichlorobenzene...55:33
106-47-8 p-Chloroaniline...60:21
106-51-4 p-Quinone...78:27
106-87-6 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25
106-92-3 Allyl glycidyl ether...76:17
107-02-8 Acrolein...59:23
107-07-3 Ethylene chlorohydrin...58:19
107-15-3 Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17, 77:29

| | |
|---|---|
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-86-1 | Bromobenzene...77:23 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9 |
| 109-99-9 | Tetrahydrofuran...74:17 |
| 110-00-9 | Furan...76:27 |
| 110-54-3 | Hexane...55:21, 69:23, 71:33 |
| 110-80-5 | 2-Ethoxyethanol...65:3, 66:9 |
| 111-15-9 | 2-Ethoxyethanol acetate...65:3 |
| 111-30-8 | Glutaraldehyde...57:15 |
| 111-76-2 | 2-Butoxyethanol...65:3, 66:9 |
| 111-90-0 | 2-(2-Ethoxyethoxy)ethanol...65:3 |
| 113-45-1 | Methylphenidate...72:33 |
| 115-07-1 | Propylene...58:23 |
| 115-09-3 | Methylmercuric chloride...55:23 |
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27 |
| 117-39-5 | Quercetin...77:15 |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 |
| | (petroleum)...66:13, 66:15 |
| 119-93-7 | 3,3'Dimethylbenzidine...76:13 |
| 120-32-1 | o-Benzyl-p-chlorophenol...72:13 |
| 120-40-1 | Lauric acid dietholamine (con 1/1); (Bis(2-hydroxyethyl)lauramide)...61:21 |
| 121-19-7 | Roxarsone...59:19 |
| 121-79-9 | Propyl gallate...63:17 |
| 123-72-8 | Butyraldehyde...72:11 |
| 123-77-3 | Azodicarbonamide...77:17 |
| 124-40-3 | Dimethylamine...71:27 |
| 124-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15, 78:23 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 148-65-2 | Chlorothen...72:25 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23, 69:5 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 396-01-0 | Triamterene...74:19 |
| 458-37-7 | Curcumin...76:15 |
| 480-81-9 | Seneciphylline...74:13 |
| 482-89-3 | C.I. Vat Blue 1...69:17 |

469-21-6 Doxylamine...64:23
470-82-6 1,8-Cineole...64:29
509-14-8 Tetranitromethane...55:15, 56:27
518-47-8 C.I. Acid Yellow 73...58:11
523-47-7 (-)-beta-Cadinene...77:19
542-56-3 Isobutyl nitrite...64:17
542-75-6 1,3-Dichloropropene...63:7
542-78-9 Malonaldehyde...58:17
555-30-6 Methyldopa...67:29
569-61-9 C.I. Basic Red 9, monohydrochloride...58:13
583-39-1 2-Mercaptobenzimidazole...69:27
584-84-9 2,4-Toluene diisocyanate...59:7
598-55-0 Methyl carbonate...67:27
673-06-3 D-phenylalanine...70:9
828-00-2 Dimethoxane...61:11
868-85-9 Dimethyl hydrogen phosphite...59:3
924-42-5 N-Methylolacrylamide...57:21
989-38-8 Rhodamine 6G...58:9
1271-19-8 Titanocene dichloride...60:31
1306-19-0 Cadmium oxide...68:21
1306-23-6 Cadmium sulfide...68:23
1309-37-1 Ferric oxide...62:5
1313-27-5 Molybdenum trioxide...70:7
1314-13-2 Zinc oxide...70:21
1314-62-1 Vanadium pentoxide...70:19
1317-71-1 Olivine...62:7
1325-37-7 C.I. Direct Yellow 11...69:15
1330-20-7 Xylene...62:11, 67:11
1330-78-5 Tricresyl phosphate...74:23
1338-23-4 2-Butanone, peroxide...62:15
1344-00-9 Sodium aluminosilicate...56:15
1406-18-4 Vitamin E...70:17
1817-73-8 2-Bromo-4,6-dinitroaniline...69:9
1854-26-8 Dimethyloldihydroxyethyleneurea...60:19
1972-08-3 -trans-delta(9)-Tetrahydrocannabinol...70:15
1982-37-2 Methdilazine...72:31, 78:25
2058-46-0 Oxytetracycline hydrochloride...57:13
2244-16-8 d-Carvone...76:21
2385-85-5 Mirex...63:15
2425-85-6 C.I. Pigment Red 3...61:15
2429-73-4 C. I. Direct Blue 2...72:17
2429-74-5 C. I. Direct Blue 15...68:27
2429-74-5 C. I. Direct Blue 15...68:25
2475-45-8 C. I. Disperse Blue 1...65:25
2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5

| | |
|---|---|
| 5989-27-5 | d-Limonene...60:27 |
| 6358-31-2 | C. I. Pigment Yellow 74...72:21 |
| 6459-94-5 | C. I. Acid Red 114...72:15 |
| 6471-49-4 | C.I. Pigment Red 23...61:13 |
| 7166-19-0 | beta-Bromo-beta-nitrostyrene...69:11 |
| 7440-38-2 | Arsenic...78:29 |
| 7440-41-7 | Beryllium...66:11 |
| 7487-94-7 | Mercuric chloride...59:31 |
| 7631-86-9 | Silica...62:7, 71:43 |
| 7681-49-4 | Sodium fluoride...56:19 |
| 7782-50-5 | Chlorine...64:3, 71:41 |
| 7783-06-4 | Hydrogen sulfide...71:37 |
| 7783-81-5 | Uranium-238 hexafluoride...55:9 |
| 7785-87-7 | Manganese sulfate...72:29 |
| 8024-37-1 | Turmeric oleoresin (cucumin)...76:15 |
| 9002-92-0 | Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5 |
| 9003-39-8 | 1-Vinyl-2-pyrrolidinone polymers...68:29 |
| 9005-65-6 | Polysorbate 80...60:15 |
| 1321-12-6 | Nitrotoluene (undefined mixture)...73:27 |
| 10028-15-6 | Ozone...59:25 |
| 10098-97-2 | Strontium-90...56:9 |
| 10325-94-7 | Cadmium nitrate...69:13 |
| 10361-37-2 | Barium chloride...70:25 |
| 10599-90-3 | Chloramine...72:23 |
| 12001-28-4 | Crocidolite...63:27 |
| 12001-29-5 | Chrosotile...63:25 |
| 12070-12-1 | Tungsten carbide [WC]...74:25 |
| 12172-73-5 | Amosite...63:23 |
| 12266-32-9 | Plutonium-238 dioxide...61:7, 73:21 |
| 12741-11-6 | Zirconium silicate...62:7 |
| 13552-44-8 | 4,4'-Methylenedianiline dihydrochloride...63:13 |
| 13961-86-9 | Oleic acid dietholamine salt...65:15 |
| 13968-56-4 | Plutonium-239 tetranitrate...61:7, 73:21 |
| 14047-09-7 | 3,3',4,4'-Tetrachloroazobenzene...58:3 |
| 14807-96-6 | Talc...70:13 |
| 14808-60-7 | Quartz...62:5 |
| 14567-73-8 | Tremolite...63:19 |
| 15117-96-1 | Uranium-235...55:9 |
| 16127-62-1 | Amosite...63:23 |
| 16561-29-8 | 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21 |
| 19086-72-7 | Olivine...62:7 |
| 21232-47-3 | 3,3',4,4'-Tetrachloroazoxybenzene...58:3 |
| 21645-51-2 | Hydrated alumina (Aluminum hydroxide)...62:5 |
| 22840-34-2 | Plutonium-239 dioxide...56:11, 61:7, 73:21 |
| 23246-96-0 | Riddelline...74:15 |
| 28407-37-6 | C. I. Direct Blue 218...72:19 |
| 26628-22-8 | Sodium azide...56:31 |
| 26677-58-7 | Plutonium-239 citrate...56:11 |

36355-01-8 Hexabromobiphenyl...64:13
52551-67-4 HC Yellow No. 4...64:5
53799-46-5 Crocidolite...63:27
58425-86-8 Aluminum silicate...62:7
61076-97-9 Chrysotile...63:25
61105-31-5 Crocidolite...63:27
64741-55-5 Light catalytic cracked naphtha...67:3, 67:5
64741-56-6 Vacuum residuum (petroleum)...67:21
64741-62-4 Catalytic cracked clarified oil (petroleum)...67:23
64741-63-5 Light catalytic reformed naphtha (petroleum)...66:25, 66:27
64741-87-3 Sweetened naphtha (petroleum)...66:17, 66:19
64742-48-9 Hydrotreated heavy naphtha (petroleum)...67:17, 67:19
64742-80-9 Hydrodesulfurized middle distillate (petroleum)...66:13, 66:15
64742-81-0 Hydrodesulfurized kerosene (petroleum)...66:21, 66:23
68334-30-5 Petroleum products, diesel oil...61:9, 73:17
68512-90-3 Diesel test fuel...73:17
68476-34-6 Fuels, diesel, No. 2...61:9, 73:17

## Supporting and Performing Organizations

- American Petroleum Institute
  - *Coate, W....67:7
  - *Furst, A....67:25
  - *Jagannath,...67:13
  - *Schroeder, R.E....67:11
  - *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
  - *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
  - *Weaver, N.K....55:27
  - Sponsored studies...67:23
- American Health Foundation
  - Williams, G. M....75:15, 75:17, 75:19
- Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5, 72:13, 74:23, 76:23, 76:25
- Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13, 76:17
- Biodynamics...67:11
- Borriston Research Laboratories
  - Niemeier, R. W....62:7
- Brookhaven National Laboratory...71:43
  - Drew, R.T....59:23, 59:25, 64:3
  - Kutzman, R.S....59:23, 59:25, 64:3
- Bushy Run Research Center, Union Carbide
  - DePass, L. R....60:5, 60:7, 60:9, 60:11
  - Peterson, L.G....60:11
  - Woodside, M. D....60:5, 60:7
  - Yang, R.S.H...60:5, 60:7, 60:9, 60:11, 60:17
  - Zelenak, J.P....60:9
- Central Institute for Nutrition & Food...68:19
- Chemical Industry Institute of Toxicology
  - *Barrow, C. S....71:27, 71:41
  - *Bus, J.S....71:37, 71:39
  - *Drew, R. T....71:43
  - *Gralla, E....55:3, 55:5, 71:33, 71:35
  - Hamm, T....71:29, 71:31
  - *Kutzman, R. S....71:43
  - Sponsored studies...71:27, 71:29, 71:31
- Chemical Manufacturers Association...78:29, 78:31
  - *Stack, C.R....55:27, 55:29, 55:31, 55:33, 75:15, 75:17, 75:19
- Department of Energy...56:9, 56:11, 61:7, 61:9
- Dow Chemical USA
  - John, J.A....55:27, 55:29, 55:31, 55:33
  - Sponsored studies...60:7, 60:9, 60:11
- Elars Bioresearch Laboratories, Inc...67:9, 67:15
- Enviro Control, Inc.
  - Futagaki, S....60:3
  - Thomas, P....60:3
- Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15, 72:23, 72:29, 74:17
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23, 72:15, 76:13
  Coate, W. B....55:25
Hazelton Raltec Inc....72:33, 73:23, 73:25, 74:15, 74:21
Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute 73:13, 73:15, 73:17, 73:19, 73:21
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9, 73:13, 73:15
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp....57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17, 72:19, 74:11, 74:19, 76:21
  Ulrich, C....71:41
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13, 72:31, 73:31
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33, 76:15, 77:15
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
Midwest Research Institute...55:15, 56:27
Morgantown Energy Technology Center...73:13, 73:15,
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19, 75:13, 75:21
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3

*Project Officer/Compound Manager

National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19, 78:15, 78:17, 78:19, 78:21, 78:23
  *Brown, D....55:9, 78:23
  *Boeniger, M....55:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  *Cox, C....60:3
  *Donaldson, H....66:3
  *Elliott, L....56:3, 56:7
  *Herrick, B....60:3
  *Honchar, P....66:5
  Lewis, T. R....62:5
  *Meinhardt, T....78:21
  *Mullan, R....78:15
  Nelson, B.K....65:3
  *Reeve, G....66:7
  *Okun, A....66:11
  *Robinson, C....55:7
  *Rosenberg, M....66:9
  *Steenland, K....78:19
  Stern, F. B....62:3
  *Taylor, P....55:13
  *Wagner, W. D....62:9
  Ward, E....78:17
  *Whalen, J....56:5
  *Whitmire, C....55:15
  Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
National Institutes of Health
  Sponsored studies...61:3
National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21, 72:11, 72:17, 72:25, 72:27, 73:27, 73:29, 74:13, 74:21, 74:25, 75:13, 75:21
  *Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
  *Birnbaum, L....59:9, 72:13, 77:17
  *Boorman, G....76:17
  *Brown, S....69:7, 70:13
  *Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15, 73:23, 73:25, 76:23, 76:25
  *Chu, K....69:9, 70:5
  *Creasia, D....65:5, 65:17, 65:23
  *Dean, J....60:17, 65:11
  *Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
  *Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
  *Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23, 74:11
  *Eastin, W....69:5, 69:5, 69:15, 72:21
  *French, J....77:29

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

*Goldman, D....70:15, 72:31, 74:15, 78:25
*Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29, 76:15, 78:27
*Gupta, B....59:5, 70:25, 74:17
*Hartwell, W....58:5, 59:19, 59:21, 60:21
*Huff, J....63:15, 64:33
*Irwin, R....59:29, 64:25, 65:13, 69:19, 74:23, 76:27, 77:13, 77:33
*Jackson, C....64:17
*Jameson, C. W....55:17, 60:27, 63:3
*Kluwe, W. M....57:5, 65:9, 72:33, 76:19, 77:23, 77:25
*Lamb, J. C....57:29, 63:13, 77:21, 77:27
*Luster, M....73:31
*Maronpot, R....77:31
*Matthews, H....59:11, 59:27, 65:21
*McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
*McCoy, J.L....60:19, 69:25, 70:23, 70:27, 76:21, 77:15
*Melnick, R....56:21, 59:17, 63:11
*Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17, 72:15, 72:19, 76:13
*Moorman, W....70:21
*Niemeier, R....70:19
*Padarathsingh, M....62:19
*Plotnick, H....69:21
*Powers, M....56:23, 57:3, 57:9, 57:15, 57:21, 77:19 59:15, 62:23, 64:5, 64:19
*Quest, J....67:27, 69:27, 70:7
*Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
*Van Stee, E....60:13
*Walters, D....72:29
*Ward, J.M....58:17, 58:19, 58:21, 61:11
*Weber, H....69:11
*Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11, 72:23, 74:19
Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35
Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25, 76:19, 76:27, 77:13
SRI International...61:19, 62:17, 65:7

*Project Officer/Compound Manager

Springborn Institute for Bioresearch, Inc....58:7
Texaco
 Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5, 71:33, 71:35
  Morgan, J. M....71:37, 71:39
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29, 72:23
Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

# INSTRUCTIONS FOR FILLING IN THE FORM

**Supporting Organization**

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

**Project Title**

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

**Investigator(s)**

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

**Performing Organization**

Enter name of organization where work is actually being done.

**Start Date, End Date and Annual Funding**

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

**Project Summary**

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

**Send All Notices of Research Projects Directly To:**

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# RTECS
REGISTRY OF TOXIC EFFECTS
OF CHEMICAL SUBSTANCES

# CONDENSED

Bethesda, Maryland 20209

**RTECS DEFINED**

RTECS (Registry of Toxic Effects of Chemical Substances) is in the National Library of Medicine's online version of the National Institute for Occupational Safety and Health's (NIOSH) annual compilation of substances with toxic action. The original collection of data that makes up RTECS was known as the Toxic Substances List, compiled in 1971 by NIOSH in response to the Occupational Safety and Health Act of 1970. The hard copy version of RTECS is updated annually with quarterly microfiche editions available. NIOSH is responsible for the file content in RTECS, and for providing quarterly updates to NLM. RTECS currently contains toxicity data for more than 50,000 substances (1/82).

RTECS is structured around individual chemical records of substances with toxic activity, and thus provides a single source document for basic toxicity information. RTECS includes some listings of unevaluated toxicity data and specific toxicological effects which are searchable. The sources of the toxicity data are identified, with the name of the journal, volume, page, and year given. Also included in RTECS are threshold limit values, aquatic toxicity ratings, air standards, NTP carcinogenesis bioassay information, toxicological/carcinogenic review information, status under various Federal regulations, compound classification, and NIOSH Criteria Document availability.

**RTECS ACCESSED**

RTECS is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland, by direct telephone line or via nationwide networks using telephone lines and small computers with access nodes located in many major cities.

**RTECS SEARCHED**

The user can search RTECS for a particular chemical record by entering the Secondary Source ID, CAS Type 1 Name, Synonyms, or CAS Registry Number. The user can also search RTECS for information on a group of compounds or to identify a group of substances on the basis of a selected effect or criteria, or to focus on selected effects reported for a given substance. Online RTECS gives the user the flexibility of interactive searching and retrieval which allows focusing on subsets of data and tailoring of prints according to user needs. A simulated RTECS record, in the format it appears in the online file follows:

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / Public Health Service / National Institutes of Health

**RTECS AVAILABILITY**

RTECS is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 8:30 A.M. to 5:00 P.M. (Eastern Time.)

**RTECS COST**

The cost of access to the RTECS file is $22 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $15 per hour at non prime times. There is a charge of $0.15 per page for offline printout.

**RTECS USER SERVICES**

For Online Systems services including access to the RTECS file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For RTECS content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–1131

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

79

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike
Bethesda, Maryland 20209
Tel: (301) 496-1131
ISSN: 0146-1559

PB82-915012
NUMBER 79
DECEMBER 1982

# TOX-TIPS

Toxicology Testing in Progress • A monthly current awareness bulletin.

## Table of Contents

Page

2 ABOUT TOX-TIPS
3 FROM THE EDITOR
5 METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS
11 Case-Control Study of Formaldehyde Exposed Workers
13 Uranium Miners - Low Dose Study
15 Mortality & Industrial Hygiene Characterization of Work Exposed to Lead Chromate Paints
17 Ethylene Oxide Mortality Study
19 Estimation of Occupationally Related Mortality and Morb
21 CMA Biomedical and Environmental Special Program: Ethylene Oxide
23 CMA Biomedical and Environmental Special Program: Glycol Ethers
25 Tests for toxicologic and carcinogenic effects: Status of Tris(2-Chloroethyl) Phosphate
27 Tests for toxicologic and carcinogenic effects: Status of Epinephrine Hydrochloride
29 Tests for toxicologic and carcinogenic effects: Status of Isoproterenol
31 ANNUAL INDEX OF COMPOUNDS
37 INDEX BY CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
43 SUPPORTING AND PERFORMING ORGANIZATIONS
49 NOTICE OF RESEARCH PROJECT BLANK FORM
51 CHEMLINE CONDENSED

NEWARK PUBLIC LIBRARY
MAY 27 1983
U. S. GOVT. PUBS.
DEPOSITORY 376

Sponsored by
Toxicology Information Subcommittee
DHHS Committee to Coordinate
Environmental and Related Programs

HE 20.3620:

# TOX-TIPS

TOX-TIPS results from a cooperative effort to prevent the duplication of toxicity testing programs and epidemiology studies to determine toxic risks of chemical substances and other agents. The monthly publication is sponsored by the Toxicology Information Subcommittee of the DHHS Committee to Coordinate Toxicology and Related Programs and is produced under the direction of the Toxicology Information Program, Specialized Information Services, at the National Library of Medicine.

TOX-TIPS is a product of the combined efforts of industrial, government, and academic organizations reporting on initiation of testing projects and epidemiology studies to determine toxicity. As the emphasis of the program is to provide a mechanism for avoidance of inadvertant duplication of expensive tests, publication preference is given to long-term studies, although other projects are reported. For this publication, a long-term test is defined as one where the duration of the study is at least 10% of the animal's life expectancy. Hence, projects reporting 90-day and longer animal studies are published.

In TOX-TIPS, project descriptions are fully indexed by study parameters. Indexes by supporting and performing organizations and principal investigators are also included; all indexes are cumulated quarterly. References to completed studies, including NTP Bioassay Program reports, are accepted for index entry. In addition, TOX-TIPS carries selected references to articles from the recent literature on work related to the reported project. These bibliographic citations are retrieved from searches, conducted by NLM staff, of the National Library of Medicine's on-line data bases.

Input to the publication is submitted on blank TOX-TIPS pages included in each issue. Prompt reporting of new projects to the Editor, TOX-TIPS reduces the chances of duplication as material is usually printed in the first issue scheduled after its receipt.

Inquiries and requests for sample issues of publications should be directed to the EDITOR, TOX-TIPS at the National Library of Medicine. Subscription activities are managed by the National Technical Information Service which should be contacted directly.

Order TOX-TIPS from:
National Technical Information Service (NTIS)
5285 Port Royal Road Springfield, VA 22161

Annual Rates:

| | |
|---|---|
| North American Continent addresses | $45 |
| All others | $90 |

Bulk rates available on request from NTIS

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

## FROM THE EDITOR

NIOSH has summarized its activities in the CIS program as follows:

NIOSH is the U. S. National Center for the International Occupational Safety and Health Information Center (CIS), Geneva, Switzerland. CIS abstracts bulletin or on-line service provides access to the most important and recent occupational safety and health literature from thirty countries including the United States, United Kingdom, France, Canada, and Russia. Information available from the CIS services includes such items as: occupational medicine and physiology; industrial toxicology and environmental hygiene, accident prevention, safety engineering, loss control; conditions of work, ergonomics, human engineering; management techniques, training and education, occupational psychology and sociology, labor administration, and workmen's compensation. To receive information on CIS ABSTRACTS in printed form, contact the International Labour Office, Washington Branch, 1750 New Yoek Avenue, Northwest, Washington, D.C., 20006, telephone: 202-376-2315. CIS subscribers can receive from NIOSH single microfiche complimentary copies of the original documents listed in the bulletins. CIS on-line information is available from Questel, Inc., 1625 Eye Street, Northwest, Suite 818, Washington, D.C., 20006, telephone: 800-424-9600.

Carol B. Haberman

EDITOR, TOX-TIPS

# ANNOTATED BIBLIOGRAPHIES ON CURRENT TOPICS IN TOXICOLOGY

Federal organizations concerned with toxic substances share a common need for basic information about chemical substance(s) and related topics. In recognition of this, several government agencies have joined in establishing the Information Response to Chemical Concerns (IRCC) Project. One objective of this Project is to produce annotated bibliographies on current topics in toxicology. These bibliographies are prepared by the Toxicology Information Response Center at the Oak Ridge National Laboratory in cooperation with the National Library of Medicine and published by the Federation of American Societies for Experimental Biology.

The IRCC Project is sponsored by the DHHS Committee to Coordinate Environmental and Related Programs, the Center for Diesease Control, the Environmental Protection Agency, the National Institute of Environmental Health Sciences, the National Oceanic and Atmospheric Administration, and the National Institute for Occupational Safety and Health.

The following annotated bibliographies are now available.

**NLM/TIRC-80/1 HEALTH AND ENVIRONMENTAL EFFECTS OF ACID RAIN.** *An abstracted literature collection 1966-1979.* N. S. Dailey and S. G. Winslow, Toxicology Information Response Center, March 1980. 202 pages. $15.00 postpaid.

Major subject categories include: *Atmospherics; Aquatic and Terrestrial Environmental Effects; Health Effects; Measurement Methods; Modeling.* A listing of current research projects, including a brief description, sponsor and principal investigator, is provided at the end of the bibliography.

**NLM/TIRC-80/2 ASBESTOS IN AIR.** *A bibliography with abstracts 1964-1980.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, July 1980. 52 pages. $7.00 postpaid.

This bibliography includes references pertaining to quantitative methods of determining airborne asbestos particles and quantitative levels of atmospheric asbestos fibers. A permuted title index (KWOC) is also provided.

**NLM/TIRC-80/3 CHEMICAL WASTE DISPOSAL – Chemicals Identified in Terrestrial and Aquatic Waste Disposal Processes.** *A selected bibliography with abstracts 1964-1979.* J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, November 1980. 82 pages. $10.00 postpaid.

References are categorized in the following topical areas: *Adverse Effects* on Aquatic Species, Terrestrial Species and Vegetation; *Methods of Disposal* including burial, injection, landfill, spray and water; *Radioactive Waste Disposal; Environmental Impact* including analysis, monitoring, identification, environmental contamination and transport; *Health Effects* including biological studies, toxicity, tissue accumulation and mortality data for aquatic and terrestrial animals.

**NLM/TIRC-80/4 HEALTH ASPECTS OF UREA/FORMALDEHYDE COMPOUNDS.** *A selected bibliography with abstracts 1963-1980.* N. P. Drago, J. G. Pruett and S. G. Winslow, Toxicology Information Response Center, December 1980. 52 pages. $7.50 postpaid.

Each of the 134 references contains a citation in alphabetical order by author and an abstract where available. A title index is also provided. A number of the references (44%) pertain to urea-formaldehyde compounds used in home insulation and in the fabrication of construction materials.

**NLM/TIRC-81/1 TOXICITY OF VANADIUM COMPOUNDS.** *A Bibliography with Abstracts 1965-1980.* N. S. Dailey, S. A. Mashburn and S. G. Winslow, Toxicology Information Response Center, July 1981. 100 pages. $15.00 postpaid.

This report was produced primarily because of concern for the effects of potential exposure to vanadium compounds associated with synthetic fuel processes. The 261 references each contain a citation as well as an abstract where available. A title index and chemical name index are also provided.

**NLM/TIRC-81/2. THE EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE IMMUNE SYSTEM.** *A selected bibliography with Abstracts, 1969-1980.* By S. G. Winslow, TIRC, Oak Ridge National Laboratory. November 1981, 78 pages, $10.00 postpaid.

The report contains 216 references, each containing a citation (in alphabetic order by author), an abstract (where available), chemical name(s), and species used. Several indices (chemical name, species, and title) are provided. Sources searched included ten DIALOG^R files plus MEDLINE and TOXLINE.

**NLM/TIRC-82/1. HEALTH EFFECTS OF ENVIRONMENTAL CHEMICALS ON THE ADULT REPRODUCTIVE SYSTEM.** *A selected bibliography with Abstracts, 1963-1981.* By J. G. Pruett and S. G. Winslow. Toxicology Information Response Center, October 1982. 62 pages. $10.00 postpaid.

The report contains 305 reference, including citations on occupational or inadvertent (environmental) exposure to chemicals. Each listing contains a citation, an abstract (where available), chemical name(s) (if specified), and keywords. Information concerning current research projects and reviews are in separate sections at the end of the bibliography. A total of ten DIALOG^R and MEDLARS^R sources were searched.

---

ORDER FORM –
NLM/TIRC ANNOTATED BIBLIOGRAPHIES

| | | |
|---|---|---|
| ☐ | NLM/TIRC 80/1 Health and Environmental Effects of Acid Rain | $15.00 |
| ☐ | NLM/TIRC 80/2 Asbestos in Air | $ 7.00 |
| ☐ | NLM/TIRC 80/3 Chemical Wast Disposal | $10.00 |
| ☐ | NLM/TIRC 80/4 Health Aspects Urea/Formaldehyde Compounds | $ 7.50 |
| ☐ | NLM/TIRC 81/1 Toxicity of Vanadium Compounds | $15.00 |
| ☐ | NLM/TIRC 81/2 The Effects of Environmental Chemicals on the Immune System | $10.00 |
| ☐ | NLM/TIRC 82/1 Health Effects of Environmental Chemicals on the Adult Reproductive System | $10.00 |

Send your check or purchase order to: F.A.S.E.B. Special Publications, 9650 Rockville Pike, Bethesda, MD 20814

# METHODS OF TESTING CHEMICALS FOR BIOLOGICAL EFFECTS

*Compiled by Williamina A. Himwich, Ph.D.*

The primary purpose of this alerting service is to highlight information about developments in methods of testing chemicals for biological effects. Selection of items is not based on judgement of the relative technical value of the reference.

Citations to the recent journal literature as well as to statements and reports from the *Federal Register* and various federal agencies are included. In all cases, care has been taken to cite only those documents obtainable from a library, the National Technical Information Service, or the organization identified in the citation.

We are very interested in learning your opinions about the content, format, and general usefulness of this service. Please address your comments to:

EDITOR, TOX-TIPS
National Library of Medicine
Toxicology Information Program
Bethesda, MD 20209
Telephone 301/496-1131

## GOVERNMENT REPORTS

Dudney, C.S. et al. Use of relative toxicity for risk estimation. *Govt Reports Announcements & Index (GRA&I) Issue 21*, 1982. NTIS/DE82010200

A new method is reported by which it is possible to estimate human risk assessment based upon toxicological potency. This method takes into account the epidemiological, toxicological, and basic biochemical and biophysical data. A symposium on the application of short-term bioassays in the analysis of complex environmental mixtures was held at Chapel Hill, NC USA, Jan 25, 1982.

Wyrobek, A.J. Methods for evaluating the influence of chemicals on reproductive fertility. *Govt Reports Announcements & Index (GRA&I) Issue 21*, 1982. NTIS/DE82011071

Sperm anomaly tests offer an opportunity to monitor damage to the male reproductive system and to study chemical mutagenesis. Sperm assays in man and in animals and their possible applications are discussed in this paper. The predictive value of sperm changes, the corrolation of results to carcinogenicity and to mutagenicity, and the weaknesses and advantages of sperm assay are also discussed. INSERM symposium, Corsica, France, Sep 21, 1981.

Christian, M.S. and Voytek, P.E. *In vivo* reproductive and mutagenicity tests. *Govt Reports Announcements & Index (GRA&I) Issue 21*, 1982. NTIS/PB82-221599

This review covers current *in vivo* techniques for estimating reproductive and genetic damage due to chemicals. The protocols of the various regulatory agencies in the U.S. as well as those from countries belonging to the Organization for Economic Cooperation and Development are compared. The possibilities of using mammalian *in vivo* mutagenicity data to assess human risk is also considered. This report was prepared in cooperation with the Argus Research Laboratories, Inc., Horsham, PA.

Riener, E. and Durham, W.F. Toxicology of pesticides. *Govt Reports Announcements & Index (GRA&I) Issue 21*, 1982. NTIS/PB82-226077

Five toxicological studies of pesticides conducted by the Institute for Medical Research and Occupational Health, Zagreb, Yugoslavia are reported along with the summaries of seven student theses related to work conducted by the Institute. In the first study, the reactions of two groups of esterases, namely cholinesterases and arylesterases, were studies in relation to inhibitors and substrates; in the second group, studies of pesticide residues were determined in workers' urine. The third study emphasizes residues in human milk and blood. The effects of recent changes in the protective procedures were assayed by following cholinesterase levels in the blood in the fourth study, and in the firth study the "alleged" effects of pesticides on the eyes and on vision were evaluated and discussed.

Davenport, R.J. and Glennon, J.P. Mammalian toxicology testing: Problem definition study. Part 3, Impact of future changes report. *Govt Reports Announcements & Index (GRA&I) Issue 19,* 1982. NTIS/ AD-A114 711/5

The impact of changes in techniques for assessing toxicity and the regulatory changes for the period 1981-1990 were identified and analyzed. Major increases in the need for toxicology testing can be anticipated even though no more legislation is passed. Increased diversity in the professionals required to do the testing as well as in the animals and testing procedures used can be expected. Conclusions and recommendations are provided in this report as well as early warning signals of probable changes.

Chaube, S. et al. Dermatotoxicity: Selected issues in testing for dermal toxicity, including irritation, sensitization, phototoxicity, and systemic toxicity. *Govt Reports Announcements & Index (GRA&I) Issue 21,* 1982. NTIS/PB82-224320

The rabbit is the animal most frequently used for studies of dermal irritation; however, the guinea pig may also be used. The factors affecting the results of irritation tests are listed. "This review suggests a tier-like strategy utilizing pH limits. Preliminary screening in the hairless mouse may be useful in evaluating irritation potential."

Falahee, K.J. et al. Eye irritation testing: An assessment of methods and guidelines for testing materials for eye irritancy. *Govt Reports Announcements & Index (GRA&I) Issue 21*, 1982. NTIS/PB82-225764

> The basic test for ocular materials is based upon the response of the rabbit eye to material instilled directly into it. The guidelines published recently by the Organization for Economic Cooperation and Development (OECD) and the Interagency Regulatory Liaison Group (IRLG) are essentially the same, calling for the instillation of 0.1 ml material into the eye with observations for at least 24h.

---

## JOURNAL REFERENCES

Gill, R.,Bal, T.S. and Moffat, A.C. The application of derivative UV-visible spectroscopy in forensic toxicology. *J Forensic Sci Soc, 22*, 165-71, 1982.

> Data from UV-spectroscopy appears to have "...considerable potential..." in forensic toxicology when presented in the derivative mode. In such cases the data could aid in the identification of compounds with similar spectra. The limitations of the use of wave-length shifts as produced by spectrometers that depend upon electronic differentiation are discussed.

Grahame-Smith D.G. Preclinical toxicology testing and safeguards in clinical trials. *Eur J Clin Pharmacol, 22*, 1-6, 1982.

O'Malley, K. and Kelly, J.G. Toxicity testing in relation to aging. *Arch Toxicol [Suppl] 5*, 59-63, 1982.

> The elderly are the ones who show the highest incidence of adverse drug reactions. In view of this, it is unfortunate that most drug testing is done

either on young volunteers or young animals and the results extrapolated to other age groups. Many of the factors which determine drug responses are different in the elderly such as pathophysiology, pharmacokinetics and pharmacodynamics. If a drug is intended for use in the elderly, the clinical effects should be tested in that age group.

Bowman, M.C. et al. A "marker" technique to monitor treated industrial wastewater effluents. *Sci Total Environ, 24,* 158-75, 1982.

At the present time the testing of effluents from wastewater is done to determine if harmful substances have been adsorbed by carbon and XAD-2 resin. The authors propose replacing this technique with one which measures the efficiency of the adsorbants at given intervals. A "marker" such as gentian violet should not appear in the effluent if the adsorbants are operating efficiently. Therefore the appearance of the "marker" would signal the need for a change of adsorbants. This technique is presented as a "...cost effective alternative to extensive and laborious chemical assays."

Dewar, A.J. Neurotoxicity testing with particular reference to biochemical methods. *Test Toxic, [Pap. Easter Sch],* 199-217, 1981.

This review discusses many references and includes evaluation of the neurotoxicity of methanol.

Anderson, F.A. Photochemical toxicity: toxic, allergic and carcinogenic aspects with emphasis on predicting effects in humans--an introduction. *JNCI, Vol 69 Issue 1,* 1982.

Weisbrod, D. Practical experience in the determination of acute dermal toxicity (LD50). Tasungsber.-Akad. Landwirtschaftswiss. D.D.R.; Vol 187, ISS Hys.-Toxicol. Qualitaetssicher. Ernteprod. Anwed.Pflanzschutzm. Mitteln Steuer. Bio. Prozesse, 211-17, 1981.

This study compares the use of open and closed methods for testing the dermal toxicity of compounds in rats. The open method requires the painting of the compound directly upon the shaved skin while the closed method applies a pad of gauze and foil impregnated with the compound. "The open method was not more sensitive than the closed method for compounds with higher toxicity." (oral LD50 greater than 1500mg/kg). The author emphasizes that six animals is too small a sample for statistical analysis. He recommends that in using the closed method the bandage be removed as well as all traces of the compound on the skin after 24h.

Schneider, B. [Drug safety and therapeutic index/Principals of pharmacological screening and of the clinical transferability of animal experiments results (authors translation)]. *Arzneimittelforsch*, *32*, 471-4, 1982.

The major effort of preclinical screening must be to establish effectiveness and relative toxicity. The author compares the therapeutic index as defined by N. Brock (the ratio of the toxic to the curative properties) to the so-called "coefficient of danger"- an approximately equivalent measure. A preclinical screening procedure is suggested which allows "...decisions with preassigned error probabilities at minimum experimental effort." A posteriori probability according to Bayes' theorem is proposed as a reliability measure for clinical inferences.

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Institute for Occupational Safety and Health

**SUPPORTING ORGANIZATION NUMBER(S):**
**Contract No: and/or Control No:** VMH Iyy 590

**PROJECT TITLE:**

Case-Control Study of Formaldehyde Exposed Workers

**INVESTIGATOR(S):**

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
Division of Surveillance, Hazard Evaluations and Field Studies

**PERFORMING ORGANIZATION:**

**Name and Address. Including Zip Code.**
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

**PERIOD FOR THIS NRP:**
**Start Date:** October 1982
**End Date:** September 1985
**Annual Funding:**

**PROJECT SUMMARY:**

Recently attention has focused on the possible human carcinogenicity of formaldehyde. This concern has primarily arisen from the findings that inhalation of formaldehyde induces nasal carcinomas in rats. Several cohort mortality studies have been initiated to address this question including NIOSH's study of garment workers. Unfortunately, all of these studies are extremely limited in their statistical power to detect rare causes of death such as nasal cancer. This study will use a case-control approach which is particularly well suited for studying rare disease.

Cases and controls for this study will be drawn from an insurance fund's death benefit file. The company and union locals of the cases and controls will be asked to complete a questionnaire on formaldehyde and other occupational exposures that might be etiologically relevant. With this information, cases of respiratory cancer (e.g. nasal) will be compared to controls in terms of the frequency of formaldehyde and other occupational exposures.

In addition to the case-control study, part of the data set will be used to conduct a PMR analysis in which other causes of death can be examined. If excesses of other causes are found, additional case-control studies to determine the etiologic factors responsible will be considered.

CAS Registry No.
Formaldehyde 50-00-00

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830--Phone: 615-576-1743.

Elliot L
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF FORMALDEHYDE
Toxicology Research Projects Directory, Vol.06 iss.08 1981
Epidemiology Research Projects Directory, 1981

Grajecki C ; Kramaschke V
Carcinogenic risks of formaldehyde
Brauwelt; VOL 121, ISS 47, 1981,1852-4

Perera F ; Petito C
Formaldehyde: a question of cancer policy?
Science; VOL 216, ISS 4552, 1982, P1285-91

NATL INST OCCUP SAF HEALTH
Formaldehyde: Evidence of carcinogenicity.
NIOSH (NATL INST OCCUP SAF HEALTH) CURR INTELL BULL; 0 (34).
1981. 1-15.

Beritic T ; Kovac S ; Dimov D
Formaldehyde in current environmental toxicology
Arh. Hig. Rada Toksikol.; VOL 32, ISS 4, 1981,363-94

GOLDMAN M ; STEIN AA
FORMALDEHYDE HEALTH EFFECTS REGULATION AND ENVIRONMENTAL CONTROL
J HISTOTECHNOL; 4 (1). 1981. 13-16.

Report of the Federal Panel on Formaldehyde.
Environ Health Perspect; VOL 43, 1982, P139-68

JENSEN OM ; ANDERSEN SK
LUNG CANCER RISK FROM FORMALDEHYDE
LANCET; 1 (8277). 1982. 913.

ALBERT RE ; SELLAKUMAR AR ; LASKIN S ; KUSCHNER M ; NELSON N
SNYDER CA
Gaseous formaldehyde and hydrogen chloride induction of nasal
cancer in the rat.
J NATL CANCER INST; 68 (4). 1982. 597-604.

Andersen SK ; Jensen OM ; Oliva D
[Exposure to formaldehyde and lung cancer in Danish physicians]
Ugeskr Laeger; VOL 144, ISS 21, 1982, P1571-3

Dalbey WE
Formaldehyde and tumors in hamster respiratory tract.
Toxicology; VOL 24, ISS 1, 1982, P9-14

Vainio H
Inhalation anesthetics, anticancer drugs and sterilants as
chemical hazards in hospitals.
Scand J Work Environ Health; VOL 8, ISS 2, 1982, P94-107

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMH Iai 592

PROJECT TITLE:
Uranium Miners - Low Dose Study

INVESTIGATOR(S):
Robert Roscoe

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION:
Division of Surveillance,
Hazard Evaluations and
Field Studies

PERFORMING ORGANIZATION:
Name and Address Including Zip Code:
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: December 1984
Annual Funding:

PROJECT SUMMARY:

Since the early 1950's, NIOSH and its predecessors have been studying a cohort of 4000 uranium miners to determine the adverse health effects of radon daughters and other exposures. Dose response relationships between radon daughter exposure and lung cancer have been established and used to set federal regulations.

Uranium millers are exposed to uranium, vanadium, and thorium-230. The latter radio-nuclide is of particular interest because it concentrates particularly in the tracheobronchial tissues and lymph nodes. In fact, an earlier small NIOSH study of uranium millers found an excess of lymphomas.

During FY'82 extensive analysis was undertaken and a final report written on the uranium miners cohort followed through 1977. These analyses explored longer latency effects of radon daughter exposure such as multisite carcinogenicity and interaction with cigarette smoking. In addition, a final report of the uranium millers cohort tested hypotheses of excess mortality due to lymphomas, nephritis and nephrosis.

During FY'83 and beyond, NIOSH and NCI will concentrate our efforts on those receiving low doses of radon daughters and on sputum cytology as a screening tool for lung cancer. These efforts will require extensive questionnaire follow-up of the cohort for work histories, smoking and mortality.

These projects are important to NIOSH's efforts: 1) to reevaluate the current standard for radon daughter exposures; and, 2) to assess health implications of energy industries. As nuclear energy plays a larger role in the U.S., more and more workers will be involved in these industries.

CAS Registry No.
Thorium-230 14269-63-7

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Edling C ; Axelson O ; Jacobsson P
LUNG CANCER - SMOKING, RESIDENCE AND WORK PLACE EXPOSURES
Toxicology Research Projects Directory, Vol.06 iss.12 1981
Epidemiology Research Projects Directory, 1981

Polednak AP ; Brues AM ; Rowland RE ; Stehney AF
HEALTH OF FORMER THORIUM WORKERS
Toxicology Research Projects Directory, Vol.06 iss.12 1981
Epidemiology Research Projects Directory, 1981

Wigle DT ; Stocker H ; McCullough R ; Hollywood B ; DeVilliers AJ
RADIATION EXPOSURE AND MORTALITY IN FLUORSPAR MINERS
Toxicology Research Projects Directory, Vol.06 iss.12 1981
Epidemiology Research Projects Directory, 1981

Cayolla da Motta LC ; Tavares MH ; Saragoca A ; Ferreira MA
Ferreira MJ ; Borges M
PORTUGUESE STUDY GROUP OF SIDE-EFFECTS OF THORIUM DIOXIDE
Toxicology Research Projects Directory, Vol.06 iss.11 1981

Axelson O ; Sundell L ; Edling C
MINING, SMOKING AND LUNG CANCER
Toxicology Research Projects Diractory, Vol.06 iss.11 1981
Epidemiology Research Projects Directory, 1981

Whittemore AS
EPIDEMIOLOGIC METHODS - U.S. URANIUM MINERS
Toxicology Research Projects Directory, Vol.07 iss.02 1981
Epidemiology Research Projects Directory, 1982

Lanes SF ; Talbott E ; Radford EP
A CASE-CONTROL STUDY OF LOW-LEVEL RADIATION AND LUNG CANCER
Toxicology Research Projects Directory, Vol.07 iss.02 1981
Epidemiology Research Projects Directory, 1982

Samet JM ; Valdivia AA ; Morgan MV ; Key CR
URANIUM EPIDEMIOLOGY STUDY
Epidemiology Research Projects Directory, 1981

Harley NH ; Altman SM ; Pasternack BS
Genotoxic properties of radon and its daughters
Environ. Sci. Res.; VOL 25, ISS Genotoxic Eff. Airborne Agents,
1982,411-31

Myers DK ; Stewart CG
Some Health Aspects of Canadian Uranium Mining
Govt Reports Announcements & Index (GRA&I), Issue 12, 1982

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

SUPPORTING ORGANIZATION:
National Institute for Occupational Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMH Myy 593

PROJECT TITLE:
Mortality & Industrial Hygiene Characterization of Workers Exposed to Lead Chromate Paints

INVESTIGATOR(S):
Marie Haring

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance, Hazard Evaluations and Field Studies

PERFORMING ORGANIZATION:

Name and Address, Including Zip Code.
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: September 1985
Annual Funding:

PROJECT SUMMARY:

Studies of pigment manufacturers exposed to zinc and/or lead chromate and painters exposed to zinc chromate have found increased mortality from malignant neoplasms of the respiratory system. One manufacturer of farm equipment in the United States has continuously used lead chromate paints since the beginning of the company 100 years ago. A retrospective cohort mortality study and a characterization of painters' work environment will be conducted to determine if exposure to lead chromate based paints causes increased mortality from lung cancer among exposed painters and to document the levels of chromium associated with the increased mortality.

CAS Registry No.
Zinc chromate 13530-65-9; 12018-19-8; 14018-95-2
Lead chromate 7758-97-6

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Langard S ; Andersen A
CANCER INCIDENCE AMONG WORKERS PRODUCING CHROMIUM PIGMENTS
Toxicology Research Projects Directory, Vol.07 iss.01 1981
Epidemiology Research Projects Directory, 1982

Grauman DJ ; Blair AE ; Maas TJ
MORTALITY STUDY OF U.S. COAST GUARD SHIPYARD WORKERS
Toxicology Research Projects Directory, Vol.06 iss.12 1981
Epidemiology Research Projects Directory, 1981

Davies JM
MORTALITY STUDY OF WORKERS IN THE CHROME PIGMENT INDUSTRY
Toxicology Research Projects Directory, Vol.06 iss.12 1981
Epidemiology Research Projects Directory, 1981

ANONYMOUS
CHROMIUM AND CHROMIUM COMPOUNDS
IARC(INT AGENCY RES CANCER)MONOGR; 23:205-323,1980

Dalager NA ; Mason TJ ; Fraumeni JF Jr ; Hoover R ; Payne WW
Cancer mortality among workers exposed to zinc chromate paints.
JOM; VOL 22, ISS 1, 1980, P25-9

FRENTZEL-BEYME R ; CLAUDE J
LUNG CANCER MORTALITY IN WORKERS EMPLOYED IN CHROMATE PIGMENT
FACTORIES A MULTICENTRIC CENTRAL EUROPEAN EPIDEMIOLOGIC STUDY
13TH ANNUAL MEETING OF THE SOCIETY FOR EPIDEMIOLOGIC RESEARCH,
MINNEAPOLIS, MINN., USA, JUNE 18-20, 1980. AM J EPIDEMIOL; 112
(3). 1980. 443.

Kennedy GL ; Morgan JF
Toxicity of lead chromates
Proc. - Chromates Symp., 2nd; 1981,43-60

Gardner JS ; Couley AC D
Toxicity of lead chromate pigments
Double Liaison - Chim. Peint.; VOL 28, ISS 307, 1981,111-18

NORSETH T
THE CARCINOGENICITY OF CHROMIUM
MEETING ON THE ROLE OF METALS IN CARCINOGENESIS, ATLANTA, GA.,
USA, MARCH 24-28, 1980. ENVIRON HEALTH PERSPECT; 40 (0). 1981.
121-130.

Radding SB ; Furst A
A review of metals and carcinogenicity.
In: Molecular Basis of Environmental Toxicity. Bhatnagar, R. S.,
ed. (Ann Arbor Sci. Publ. Inc.: Ann Arbor, MI): CH14: 359-372
1980 (124 References)

Post MA ; Campbell PG
Lead chromate pigments - a literature survey on environmental and
toxic effects
Report; ISS NBSIR-80-1974; Order No. PB80-160666,, 1980,44 pp.

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

SUPPORTING ORGANIZATION:
National Institute for Occupational
Safety and Health

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No: VMH Myy 594

PROJECT TITLE:
Ethylene Oxide Mortality Study

INVESTIGATOR(S):
Kyle Steenland

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Division of Surveillance,
Hazard Evaluations and
Field Studies

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code.
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

PERIOD FOR THIS NRP:
Start Date: October 1982
End Date: September 1985
Annual Funding:

PROJECT SUMMARY:

Ethylene oxide is used to sterilize hospital equipment by industrial companies which sell hospital supplies. We propose to study the mortality experience of individuals who have been exposed while sterilizing. From two animal and two human studies, it appears that ethylene oxide is a leukemogen. Excess mortality in one human study was found for leukemia, stomach cancer, all cancers, and cardiovascular disease. However, all human studies done so far are flawed by small sample size and mixed exposures, problems which we hope to overcome in our study.

CAS Registry No.
Ethlyene oxide 75-21-8

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Hogstedt C ; Malmqvist N ; Wadman B
Leukemia in workers exposed to ethylene oxide.
J. Am. Med. Assoc. 241(11): 1132-1133 1979 (14 References)

GLASER ZR
ETHYLENE OXIDE:TOXICOLOGY REVIEW AND FIELD STUDY RESULTS OF HOSPITAL USE
J ENVIRON PATH TOXICOL; 2:173-208,1979

Anonymous
Ethylene oxide.
In: Hazardous and Toxic Effects of Industrial Chemicals. Sittig, M., ed. (Noyes Data Corp.: NJ): pp. 208-210 1979 (14 References)

WHO
Chemicals and industrial processes associated with cancer in humans.
IARC Monogr. Eval. Carcinog. Risk. Chem. (1): 71-71 1979 (25 References)

Ehrenberg L
Risk assessment of ethylene oxide and other compounds.
Cold Spring Harbor Symp. Ser., Banbury Rep. 1:157-190 1979

Anonymous
Has any recent research shown ethylene or ethylene oxide to be carcinogenic? If so, in what concentrations?
Br. Med. J. 1(6172): 1194 1979

MORGAN RW ; CLAXTON KW ; DIVINE BJ ; KAPLAN SD ; HARRIS VB
Mortality among ethylene oxide workers.
J OCCUP MED; 23 (11). 1981. 767-770.

Thiess AM ; Frentzel Beyme RR ; Link R ; Stocker W
MORTALITY AND MORBIDITY SURVEY OF OCCUPATIONAL RISK OF ETHYLENE AND PROPYLENE OXIDE IN CHEMICAL PRODUCTION AT BASF, LUDWIGSHAFEN, GERMANY
Epidemiology Research Projects Directory, 1980

Anon
Ethylene oxide: evidence of carcinogenicity
Vet. Hum. Toxicol.; VOL 23, ISS 6, 1981,439-43

Rinsky R ; Waxweiler R
MORTALITY STUDY OF CHEMICAL PLANTS IN THE KANAWHA VALLEY IN WEST VIRGINIA - NCI
Toxicology Research Projects Directory, Vol.06 iss.06 1981
Epidemiology Research Projects Directory, 1981

PERO RW ; BRYNGELSSON T ; WIDEGREN B ; HOEGSTEDT B ; WELINDER H
A reduced capacity for unscheduled DNA synthesis in lymphocytes from individuals exposed to propylene oxide and ethylene oxide.
MUTAT RES; 104 (1-3). 1982. 193-200.

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

# NOTICE OF RESEARCH PROJECT

# TOX-TIPS

**SUPPORTING ORGANIZATION:**

National Institute for Occupational
Safety and Health

**SUPPORTING ORGANIZATION NUMBER(S):**

**Contract No:**
**and/or**
**Control No:** VMO Byy 622

**PROJECT TITLE:**

Estimation of Occupationally Related Mortality and Morbidity

**INVESTIGATOR(S):**

John Morrison

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Division of Surveillance,
Hazard Evaluations and
Field Studies

**PERFORMING ORGANIZATION:**

**Name and Address, Including Zip Code.**
National Institute for Occupational
Safety and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226

**PERIOD FOR THIS NRP:**

**Start Date:** October 1982
**End Date:** September 1984
**Annual Funding:**

**PROJECT SUMMARY:**

The purpose of this project is to develop and implement the necessary methods to estimate occupationally related mortality and morbidity. Data are not readily available to make such estimates; the current estimate of 100,000 occupationally related deaths per year, which appeared in the President's Report on Occupational Safety and Health for 1971, is a frail one. Such estimates are necessary to: (a) determine the magnitude of the problem so that comparisons can be made between occupational health and other health problems, (b) determine the nature of the problem so that input can be made in the priority process, and (c) assess change to assist in determining program efficacy. To meet these needs, the following objectives have been set forth:

1. Evaluate the scientific literature and establish a data base which defines the array of occupationally related mortality and morbidity.
2. Develop and assess methods for estimating occupationally related mortality other than accidents.
3. Establish a working definition of morbidity and develop a proper taxonomy to characterize the problem.
4. Develop and assess methods for estimating occupationally related morbidity other than accidents.

This project will provide data to be used in priority setting areas at various levels including: budget justifications; Congressional testimony; development of programs and projects at the federal, state, and local government levels, as well as the public levels--unions, industry, and special interest groups.

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

CANTOR KP
Farming and mortality from non-Hodgkins lymphoma: A case-control study.
INT J CANCER; 29 (3). 1982. 239-248.

SHEFFET A ; THIND I ; MILLER AM ; LOURIA DB
Cancer mortality in a pigment plant utilizing lead and zinc chromates.
ARCH ENVIRON HEALTH; 37 (1). 1982. 44-52.

MCMICHAEL AJ ; JOHNSON HM
Long-term mortality profile of heavily-exposed lead smelter workers.
J OCCUP MED; 24 (5). 1982. 375-378.

ROTHSCHILD H ; MULVEY JJ
An increased risk for lung cancer mortality associated with sugarcane farming.
J NATL CANCER INST; 68 (5). 1982. 755-760.

MCNEIL BJ ; EDDY DM
The costs and effects of screening for cancer among asbestos-exposed workers.
J CHRONIC DIS; 35 (5). 1982. 351-358.

FINKELSTEIN MM
Asbestosis in long-term employees of an Ontario, Canada, asbestos-cement factory.
AM REV RESPIR DIS; 125 (5). 1982. 496-501.

BURMEISTER LF ; VAN LIER SF ; ISACSON P
Leukemia and farm practices in Iowa, USA.
AM J EPIDEMIOL; 115 (5). 1982. 720-728.

Thun M ; Stayner L ; Brown D ; Waxweiler R
Mining and deaths from chronic renal failure [letter]
Lancet; VOL 2, ISS 8298, 1982, P606

Cockcroft A ; Seal RM ; Wagner JC ; Lyons JP ; Ryder R
Andersson N
Post-mortem study of emphysema in coalworkers and non-coalworkers.
Lancet; VOL 2, ISS 8298, 1982, P600-3

Daum SM ; Heimann H ; Damon F ; Richter E ; Selikoff IJ
Mortality Patterns among Textile Workers
Govt Reports Announcements & Index (GRA&I), Issue 21, 1982

Milham S Jr
Occupational Mortality in Washington State 1950-1971: Volume II
Govt Reports Announcements & Index (GRA&I), Issue 21, 1982

Friedlander BR ; Hearne FT ; Newman BJ
Mortality, cancer incidence, and sickness-absence in photographic processors: an epidemiologic study.
J Occup Med; VOL 24, ISS 8, 1982, P605-13

**NOTICE OF RESEARCH PROJECT**

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
Chemical Manufacturers Association (CMA)
2501 M Street, N.W.
Washington, D.C. 20037

SUPPORTING ORGANIZATION NUMBER(S):
Contract No:
and/or
Control No:

PROJECT TITLE:
CMA Biomedical and Environmental Special Program: Ethylene Oxide

INVESTIGATOR(S):
For further information contact:

Chemical Manufacturers Association
Biomedical and Environmental Special Programs Division

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
Telephone (202) 887-1100

PERFORMING ORGANIZATION:
Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

For chemicals widely manufactured by industry, some companies jointly sponsor research to avoid duplication and to pool resources. CMA's Biomedical and Environmental Special Programs Division is a vehicle for many of these collaborative efforts. New developments from the Special Programs Panels in FY 1981-1982 were reported in CHEMECOLOGY, November 1982. The following information was included on page 6 of this CMA publication:

> Ethylene Oxide-A negotiated study plan for testing of this chemical, under provisions of the Toxic Substances Control Act, was submitted by the Ethylene Oxide Industry Council to the Environmental Protection Agency. The chemical is being studied for potential health effects.
>
> Ethylene oxide is used to manufacture consumer products like antifreeze, as a raw material for fibers and as a sterilant gas in the health care field.

CAS Registry No.
Ethylene cxide 75-21-8

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SOILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Anonymous
Ethylene oxide.
In: Hazardous and Toxic Effects of Industrial Chemicals. Sittig, M., ed. (Noyes Data Corp.: NJ): pp. 208-210 1979 (14 References)

WHO
Chemicals and industrial processes associated with cancer in humans.
IARC Monogr. Eval. Carcinog. Risk. Chem. (1): 71-71 1979 (25 References)

Ehrenberg L
Risk assessment of ethylene oxide and other compounds.
Cold Spring Harbor Symp. Ser., Banbury Rep. 1:157-190 1979

WOLMAN SR
Mutational consequences of exposure to ethylene oxide.
J ENVIRON PATHOL TOXICOL; 2 (6). 1979 (RECD. 1980). 1289-1304.

HOGSTEDT C ; ROHLEN O ; BERNDTSSON BS ; AXELSON O ; EHRENBERG L
A cohort study of mortality and cancer incidence in ethylene oxide production workers.
BR J IND MED; 36 (4). 1979 (RECD. 1980). 276-280.

Anonymous
Has any recent research shown ethylene or ethylene oxide to be carcinogenic? If so, in what concentrations?
Br. Med. J. 1(6172): 1194 1979

GLASER ZR
ETHYLENE OXIDE:TOXICOLOGY REVIEW AND FIELD STUDY RESULTS OF HOSPITAL USE
J ENVIRON PATH TOXICOL; 2:173-208,1979

Rinsky RA
MORTALITY AND INDUSTRIAL HYGIENE STUDIES OF WORKERS EXPOSED TO ETHYLENE OXIDE
Toxicology Research Projects Directory, Vol.05 iss.04 1980
Epidemiology Research Projects Directory, 1980

Thiess AM ; FrentzelBeyme RR ; Link R ; Stocker W
MORTALITY AND MORBIDITY SURVEY OF OCCUPATIONAL RISK OF ETHYLENE AND PROPYLENE OXIDE IN CHEMICAL PRODUCTION OF BASF, LUDWIGSHAFEN, GERMANY
Toxicology Research Projects Directory, Vol.05 iss.03 1980
Epidemiology Research Projects Directory, 1980

Snellings WM ; Maronpot RR ; Zelenak JP ; Laffoon CP
Teratology study in Fischer 344 rats exposed to ethylene oxide by inhalation.
Toxicol Appl Pharmacol; VOL 64, ISS 3, 1982, P476-81

Vainio H
Inhalation anesthetics, anticancer drugs and sterilants as chemical hazards in hospitals.
Scand J Work Environ Health; VOL 8, ISS 2, 1982, P94-107

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**

Chemical Manufacturers Association (CMA)
2501 M Street, N.W.
Washington, D.C. 20037

**SUPPORTING ORGANIZATION NUMBER(S):**

Contract No:
and/or
Control No:

**PROJECT TITLE:**

CMA Biomedical and Environmental Special Program: Glycol Ethers

**INVESTIGATOR(S):**

For further information, contact:

Chemical Manufacturers Association
Biomedical and Environmental Special Programs Division

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**

Telephone (202) 887-1100

**PERFORMING ORGANIZATION:**

Name and Address.
Including Zip Code.

**PERIOD FOR THIS NRP**

Start Date:
End Date:
Annual Funding:

**PROJECT SUMMARY:**

For chemicals widely manufactured by industry, some companies jointly sponsor research to avoid duplication and to pool resources. CMA's Biomedical and Environmental Special Programs Division is a vehicle for many of these collaborative efforts. New developments from the Special Programs Panels in FY 1981-1982 were reported in CHEMECOLOGY, November 1982. The following information was included on page 6 of this CMA publication:

> Glycol Ethers-These chemicals are being studied for possible reproductive effects using rats and rabbits as the test species. The Panel is conducting an inhalation study of ethylene glycol monoethyl ether to determine the "no-effect" level for malformations. Three other chemicals, ethylene glycol monoethyl ether acetate, ethylene glycol monomethyl ether and ethylene glycol monobutyl ether, also are being tested for teratogenic effects.
>
> The Panel is conducting a 90-day inhalation study for ethylene glycol monomethyl ether to determine a "no-effect" level for testicular changes.
>
> Glycol ethers are used mainly as solvents.

CAS Registry No.

Ethylene glycol monoethyl ether 110-80-5
Ethylene glycol monoethyl ether acetate 111-15-9
Ethylene glycol monomethyl ether 109-86-4
Ethylene glycol monobutyl ether
111-76-2

TOX-TIPS DECEMBER 1982 79-23

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

HARDIN BD ; BOND GP ; SIKOV MR ; ANDREW FD ; BELILES RP
NIEMEIER RW
TESTING OF SELECTED WORKPLACE CHEMICALS FOR TERATOGENIC POTENTIAL
SCAND J WORK ENVIRON HEALTH; 7(SUPPL 4):66-75,1981

NELSON BK ; SETZER JV ; TAYLOR BJ ; HORNUNG RW ; O'DONOHUE TL
BRIGHTWELL WS
Ethoxyethanol behavioral teratology in rats.
NEUROTOXICOLOGY (PARK FOR SOUTH); 2 (2). 1981 (RECD. 1982).
231-250.

TRUHAUT R ; DUTERTRE-CATELLA H ; PHU-LICH N ; HUYEN VN
Comparative toxicological study of ethylglycol acetate and
butylglycol acetate.
TOXICOL APPL PHARMACOL; 51 (1). 1979. 117-128.

Miller RR ; Carreon RE ; Young JT ; McKenna MJ
Toxicity of methoxyacetic acid in rats
Fundam. Appl. Toxicol.; VOL 2, ISS 4, 1982,158-60

Miller RR ; Ayres JA ; Calhoun LL ; Young JT ; McKenna MJ
Comparative short-term inhalation toxicity of ethylene glycol
monomethyl ether and propylene glycol monomethyl ether in rats
and mouse.
Toxicol Appl Pharmacol; VOL 61, ISS 3, 1981, P368-77

DUPRAT P ; GRADISKI D
PER CUTANEOUS TOXICITY OF BUTYL CELLOSOLVE ETHYLENE GLYCOL MONO
BUTYL ETHER
IRCS (INT RES COMMUN SYST) MED SCI LIBR COMPEND; 7 (1). 1979 26

HEINONEN T ; VAINIO H
Dose-dependent toxicity of ethylene glycol monomethyl ether vapor
in the rat.
EUR J DRUG METAB PHARMACOKINET; 6 (4). 1981 (RECD. 1982). 275-280.

NAGANO K ; NAKAYAMA E ; OOBAYASHI H ; YAMADA T ; ADACHI H
NISHIZAWA T ; OZAWA H ; NAKAICHI M ; OKUDA H ; ET AL
Embryotoxic effects of ethylene glycol monomethyl ether in mice.
TOXICOLOGY; 20 (4). 1981. 335-344.

ANDREW FD ; MONTGOMERY LF ; SIKOV MR ; HARDIN BD
EFFECTS OF INHALATION EXPOSURE TO ETHOXYETHANOL ON PREGNANT RATS
AND RABBITS
TOXICOLOGIST; 1:30,1981

HARDIN BD ; NIEMEIER RW ; KUCZUK MH ; MATHINOS PR ; WEAVER TE
TERATOGENICITY OF 2-ETHOXYETHANOL BY DERMAL APPLICATION
TERATOLOGY; 25(2):46A,1982

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

**SUPPORTING ORGANIZATION:**
National Toxicology Program
Department of Health and Human Services
Public Health Services
Research Triangle Park, NC 27703

**SUPPORTING ORGANIZATION NUMBER(S):**
Contract No: NTP No. 10178-C
and/or
Control No: NCI No. C60128

**PROJECT TITLE:**
Tests for toxicologic and carcinogenic effects: Status of Tris(2-Chloroethyl) Phosphate

**INVESTIGATOR(S):**
For further information, contact:

Dr. H. Matthews, Chemical Manager

**DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION**
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

**PERFORMING ORGANIZATION:**
Name and Address. Including Zip Code.
Microbiological Associates
5221 River Road
Bethesda, MD 20816

**PERIOD FOR THIS NRP:**
Start Date:
End Date:
Annual Funding:

**PROJECT SUMMARY:**

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay tris(2-Chloroethyl) phosphate is being administered by gavage to rats and mice. Chronic testing began September 1982. (See also TOX-TIPS, April 1981, 59-27.)

CAS Registry No.
Tris(2-chloroethyl) phosphate 115-96-8

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Matthews H
CARCINOGENESIS BIOASSAY OF TRIS(2-CHLOROETHYL) PHOSPHATE
Toxicology Research Projects Directory, Vol.06 iss.09 1981

Shepel'skaia NR ; Dyshginevich NE
[Experimental study of the gonadotoxic effect of
tri-(chloroethyl)-phosphate]
Gig Sanit, ISS 6, 1981, P20-1

Sprague GL ; Sandvik LL ; Brookins-Hendricks MJ ; Bickford AA
Neurotoxicity of two organophosphorus ester flame retardants in
hens.
J Toxicol Environ Health; VOL 8, ISS 3, 1981, P507-18

ULSAMER AG ; OSTERBERG RE ; MCLAUGHLIN J
FLAME-RETARDANT CHEMICALS IN TEXTILES
CLIN TOXICOL; 17:101-131,1980

WILLIAMS DT ; NESTMANN ER ; LEBEL GL ; BENOIT FM ; OTSON R
LEE E GH
Determination of mutagenic potential and organic contaminants of
Great Lakes (Canada, USA) drinking water.
CHEMOSPHERE; 11 (3). 1982. 263-276.

RAPOPORT IA
MUTAGENIC EFFECT OF DI-BETA-BETA'-CHLOROETHYLPHOSPHORIC ACID
DOKL BIOL SCI; 134:748-750,1960
(TRANSLATED FROM DOKL AKAD NAUK SSSR 134:1447-1449,1960)

LOWN J ; JOSHUA AV ; MCLAUGHLIN LW
NOVEL ANTITUMOR NIROSOUREAS AND RELATED COMPOUNDS AND THEIR
REACTIONS WITH DNA
J MED CHEM; 23:798-805,1980

CHOUDHRY GG ; HUTZINGER O
MECHANISTIC ASPECTS OF THE THERMAL FORMATION OF HALOGENATED
ORGANIC COMPOUNDS INCLUDING POLY CHLORINATED DI BENZO-P-DIOXINS
1. THEORETICAL BACKGROUND AND THERMOCHEMICAL DECOMPOSITIONS OF
MONOMERIC ALIPHATICS AND AROMATICS
TOXICOL ENVIRON CHEM; 5 (1). 1982. 1-66.

SIMMON VF ; KAUHANEN K ; TARDIFF RG
MUTAGENIC ACTIVITY OF CHEMICALS IDENTIFIED IN DRINKING WATER
DEV TOXICOL ENVIRON SCI; 2:249-258,1977

PRIVAL MJ ; MCCOY EC ; GUTTER B ; ROSENKRANZ HS
TRIS(2,3-DIBROMOPROPYL)PHOSPHATE: MUTAGENICITY OF A WIDELY USED
FLAME RETARDANT
SCIENCE; 195:76-78,1977

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No: and/or Control No: NTP No. 10041-V
NCI No. C55663

PROJECT TITLE:
Tests for toxicologic and carcinogenic effects: Status of Epinephrine Hydrochloride

INVESTIGATOR(S):
For further information, contact:

Dr. C. Grieshaber, Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address, Including Zip Code: Battelle Pacific Northwest Laboratory
Richland, WA 99352

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

In this carcinogenesis bioassay, epinephrine hydrochloride, a bronchodilator, is being administered by inhalation to rats and mice. Chronic testing began September 1982. (See also TOX-TIPS, October 1980, 53-29).

CAS Registry No.
Epinephrine hydrochloride 55-31-2

TOX-TIPS DECEMBER 1982 79-27

Sponsored by ● Toxicology Information Subcommittee ● DHHS Committee to Coordinate Environmental and Related Programs

The bibliographic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

Malyugina LL ; Pol'kina RI ; Remizov AL
Antineoplastic action of some derivatives of adrenalones
Khim.-Farm. Zh.; VOL 13, ISS 7, 1979,56-8

Romanov YA ; Biks KA
Response of cell division in Ehrlich ascites tumor of mice to adrenaline
Byull. Eksp. Biol. Med.; VOL 91, ISS 1, 1981,69-71

Grieshaber CK
CARCINOGENESIS BIOASSAY OF EPINEPHRINE HYDROCHLORIDE
Toxicology Research Projects Directory, Vol.06 iss.03 1981

TOPHAM JC
THE DETECTION OF CARCINOGEN-INDUCED SPERM HEAD ABNORMALITIES IN MICE
MUTAT RES; 69:149-155,1979

Lafontan M
Alpha-adrenergic responses in rabbit white fat cells: the influence of obesity and food restriction
J. Lipid Res.; VOL 22, ISS 7, 1981,1084-93

Dyadyusha GP ; Polyakova NK
Inhibiting effect of adrenaline on the acetylcholinesterase activity of skeletal muscle sarcolemma
Biokhimiya (Moscow); VOL 46, ISS 9, 1981,1558-63

Yano S ; Hoshino E ; Harada M
Effect of vasoactive drugs on gastric blood flow measured by a cross thermocouple method in rats
Jpn. J. Pharmacol.; VOL 31, ISS 1, 1981,117-24

Eisenburger R ; Hampel H ; Hofrichter G ; Loeser R
Comparative pharmacological study on d,l-adrenaline dipivalate hydrochloride and l-adrenaline hydrochloride after local and oral application
Arzneim.-Forsch.; VOL 31, ISS 2, 1981,325-34

HEDDLE JA ; BRUCE WR
COMPARISON OF TESTS FOR MUTAGENICITY OR CARCINOGENICITY USING ASSAYS FOR SPERM ABNORMALITIES, FORMATION OF MICRONUCLEI AND MUTATIONS IN SALMONELLA
COLD SPRING HARBOR CONF CELL PROLIFERATION; 4C:1549-1557,1977

# NOTICE OF RESEARCH PROJECT
# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:
National Toxicology Program
Department of Health and Human Services
Public Health Service
Research Triangle Park, NC 27709

SUPPORTING ORGANIZATION NUMBER(S):
Contract No; and/or Control No: NTP No. 10130-N
NCI No. C55630

PROJECT TITLE:
Tests for toxicologic and carcinogenic effects: Status of Isoproterenol Hydrochloride

INVESTIGATOR(S):
For further information, contact:

Dr. E. Van Stee, Chemical Manager

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION
National Toxicology Program
Landow Building, 3A06
7910 Woodmont Avenue
Bethesda, MD 20205

PERFORMING ORGANIZATION:
Name and Address. Including Zip Code.

PERIOD FOR THIS NRP:
Start Date:
End Date:
Annual Funding:

PROJECT SUMMARY:

National Toxicology Program (NTP) long-term carcinogenesis bioassays generally follow the following experimental design and protocol:

> Males and females of two species, Fischer 344 rats and B6C3F1 mice, are exposed to two dose levels for a long-term study (18 or 24 months) by an appropriate route of administration (feed, gavage, inhalation, injection, skin painting, or water).

About 64 months are required from inception of the study to publication of the final report. Each chemical undergoes a seven phase test cycle: pretesting, initial toxicology characterization, chronic bioassay, summary report preparation, internal program review, external program review, and report issuance.

Testing of isoproterenol hydrochloride has been terminated. Epinephrine, another bronchodilator, is on test. (See TOX-TIPS, May 1981, 60-13, TOX-TIPS, December 1982, 79-27).

CAS Registry No.
Isoproterenol hydrochloride 51-30-9

Sponsored by • Toxicology Information Subcommittee • DHHS Committee to Coordinate Environmental and Related Programs

The bibliograpnic references (author, title, source) of this page have been obtained from searches of the following National Library of Medicine's on-line retrieval files: TOXLINE, CHEMLINE, MEDLINE, SDILINE, and CANCERLINE. The searches made on the substances that are the subject of the test described in the Notice of Research Project, usually have retrieved the most recent citations from these files. Because these searches have not been exhaustive, the investigator may wish to obtain more complete searches on the test substances by searching the NLM on-line files or by contacting the Toxicology Information Response Center (TIRC) at the Oak Ridge National Laboratory, P.O. Box X. Building 2024 Oak Ridge, TN 37830—Phone: 615-576-1743.

BURNS E
CHRONOBIOLOGICAL STUDY OF THE EFFECTS OF A SINGLE INJECTION OF ISOPROTERENOL ON MITOTIC INDEX AND/OR DNA SYNTHESIS IN HORMAL AND NEOPLASTIC CELL POPULATIONS
GROWTH; 42:333-346,1978

Rutlen DL ; Supple EN ; Powell WJ Jr
beta-Adrenergic regulation of total systemic intravascular volume in the dog
Circ. Res.; VOL 48, ISS 1, 1981,112-20

Salberg DJ
CODEINE-INDUCED HISTAMINE RELEASE IN MAN
Toxicology Research Projects Directory, Vol.07 iss.01 1981

Van Stee E
CARCINOGENSIS BIOASSAY OF ISOPROTERENOL HYDROCHLORIDE
Toxicology Research Projects Directory, Vol.06 iss.10 1981

Chelmicka-Schorr E ; Arnason BG W ; Holshouser SJ
C-6 glioma growth in rats: suppression with a beta-adrenergic agonist and a phosphodiesterase inhibitor
Ann. Neurol.; VOL 8, ISS 4, 1980,447-9

Van Boom M ; Saxena PR
Systemic and regional hemodynamic responses to isoprenaline in conscious renal hypertensive rabbits
Clin. Exp. Pharmacol. Physiol.; VOL 8, ISS 3, 1981,227-39

Hashimoto H ; Kai I ; Sakai K ; Ito T ; Ogawa K ; Satake T
Effects of aspirin, indomethacin, sulfinpyrazone and propranolol on the isoproterenol-induced myocardial necrosis
Prostaglandins Thromboxanes, Proc. Int. Symp. Prostaglandins Thromboxanes Cardiovasc. Syst., 3rd; 1981,27-32

Palmore WP ; Fregly MJ ; Simpson CF
Catecholamine-mediated diuresis in turkeys
Proc. Soc. Exp. Biol. Med.; VOL 167, ISS 1, 1981,1-5

Saragoca M ; Tarazi RC
Impaired cardiac contractile response to isoproterenol in the spontaneously hypertensive rat
Hypertension (Dallas); VOL 3, ISS 3, 1981,380-5

Sobolev VI ; Dingamtar N
State of alpha1- and beta1-adrenergic reactions during cold acclimation
Fiziol. Zh. SSSR im. I. M. Sechenova; VOL 68, ISS 1, 1982,34-8

Dorr RT ; Alberts DS
Modulation of experimental doxorubicin skin toxicity by beta-adrenergic compounds
Cancer Res.; VOL 41, ISS 6, 1981,2428-32

# ANNUAL INDEX OF COMPOUNDS

This Annual Index lists compounds under test and those for which tests have been completed and published during 1982. Citations for compounds announced as under test give the issue number and page for TOX-TIPS.

A new Index of Compounds for 1983 will begin in the January issue of TOX-TIPS.

- Acetaldehyde
  - Hamster - inhalation - carcinogenicity...68:19
  - Hamster - intratracheal - carcinogenicity...68:19
- Acetonitrile
  - Short term...70:23
- Airborne effluents
  - Inhalation - mutagenicity - cytotoxicity...73:13
- Allyl glycidyl ether
  - Mouse - inhalation - carcinogenicity...76:17
  - Rat - inhalation - carcinigenicity...76:17
- Arsenic
  - Human - epidemiology...78:29
- Azodicarbonamide
  - Long-term - carcinogenicity...77:17
- Barium chloride
  - Short term...70:25
- Benzaldehyde
  - Mouse - gavage - long-term - carcinogenicity...76:19
  - Rat - gavage - long-term - carcinogenicity...76:19
- Benzene
  - Human - workplace exposure - epidemiology...78:31
- o-Benzyl-p-chlorophenol
  - Mouse - short-term - carcinogenicity...72:13
  - Rat - short-term - carcinogenicity...72:13
- Bladder carcinogens
  - Human - workplace exposure - carcinogenicity...78:19
- 2-Bromo-4,6-dinitroaniline
  - Toxicological characterization...69:9
- beta-Bromo-beta-nitrostyrene
  - Toxicological characterization...69:11
- Bromobenzene
  - Long-term - carcinogenicity...77:23
- Butyraldehyde
  - Carcinogenicity...72:11
- (-)-beta-Cadinene
  - Long-term - carcinogenicity...77:19
- Cadmium nitrate
  - Toxicological characterization...69:13

Cadmium oxide
  Carcinogenicity...68:21
Cadmium sulfide
  Carcinogenicity...68:23
Carbon disulfide
  Mouse - inhalation - 90-day...71:39
  Rat - inhalation - 90-day...71:39
d-Carvone
  Mouse - gavage - long-term - carcinogenicity...76:21
  Rat - gavage - long-term - carcinogenicity...76:21
Chlorine
  Monkey - inhalation - carcinogenicity - 24-month...71:41
  Rat - inhalation - carcinogenicity - 24-month...71:41
Chloramine
  Mouse - water - long-term - carcinogenicity...72:23
  Rat - water - long-term - carcinogenicity...72:23
4-Chloro-2-nitroaniline
  Short term...70:27
tris(2-Chloroetnyl) phosphate...79:25
  Mouse - long-term - carcinogenicity...79:25
  Rat - long-term - carcinogenicity...79:25
Chlorothen
  Carcinogenicity...72:25
Chlorpromazine hydrochloride
  Long-term - carcinogenicity...77:21
Coal combustion emissions
  Inhalation - mutagenicity - cytotoxicity...73:15
Curcumin
  Mouse - feed - carcinogenicity...76:15
  Rat - feed - carcinogenicity...76:15
o-Dichlorobenzene
  Adult rat liver cells - carcinogenicity...75:17
Diesel exhaust
  Inhalation - long-term - carcinogenicity - mutagenicity...73:17
Diesel particulates
  Inhalation - short-term - carcinogenicity - mutagenicity...73:17
Diethyl phthalate
  Long-term - carcinogenicity...77:25
1,8-Dihydroxy-4,5-dinitroanthraquinone
  Toxicological characterization...69:19
Dimethylamine
  Mouse - inhalation - 24-month...71:27
  Rat - inhalation - 24-month...71:27
3,3'-Dimethoxybenzidine
  Carcinogenicity...68:25
  Rat - water - Carcinogenicity...76:13
Diphenylhydantoin (Phenytoin)
  Mouse - feed - long-term - carcinogenicity...76:23
  Rat - feed - long-term - carcinogenicity...76:23

- 4,4'-Diphenylmethane diisocyanate
  - Carcinogenicity...77:27
- C. I. Acid Red 114
  - Rat - water - short-term - carcinogenicity...72:15
- C. I. Direct Blue 1
  - Carcinogenicity...68:25
- C. I. Direct Blue 2
  - Carcinogenicity...72:17
- C. I. Direct Blue 15
  - Carcinogenicity...68:25
  - Rat - water - carcinogenicity...68:27
- C. I. Direct Blue 218
  - Mouse - feed - short-term - carcinogenicity...72:19
  - Rat - feed - short-term - carcinogenicity...72:19
- C.I. Direct Yellow 11
  - Toxicological characterization...69:15
- C. I. Pigment Yellow 74
  - Short-term - carcinogenicity...72:21
- N, N-Dimethylformamide
  - 2-year - carcinogenicity...72:27
- Epinephrine hydrochloride
  - Rat - long-term - carcinogenicity...79:27
  - Rabbit - long-term - carcinogenicity...79:27
- Ethylbenzene
  - Toxicological characterization...69:21
- Ethylenediamine
  - Long-term - carcinogenicity...77:29
- Ethylene oxide
  - Human - workplace exposure - epidemiology...78:21
  - Human - workplace exposure - carcinogenicity...79:17
  - Human - inhalation - skin - carcinogenicity...79:21
- Ethylenethiourea
  - Mouse - feed - long-term - carcinogenicity...76:25
  - Rat - feed - long-term - carcinogenicity...76:25
- Formaldehyde
  - Human - inhalation - carcinogenicity...79:11
  - Long-term - carcinogenicity...77:31
- Furan
  - Mouse - gavage - long-term - carcinogenicity...76:27
  - Rat - gavage - long-term - carcinogenicity...76:27
- Furfural
  - Mouse - gavage - long-term - carcinogenicity...77:13
  - Rat - gavage - long-term - carcinogenicity...77:13
- Furfuryl alcohol
  - Long-term - carcinogenicity...77:33
- Gentian violet
  - Mouse - feed - long-term - carcinogenicity...75:21
  - Rat - feed - long-term - carcinogenicity...75:21
- Glycol ethers
  - Rat - Inhalation - teratogenicity...79:23
  - Rabbit - Inhalation - teratogenicity...79:23

- n-Hexane
  - Toxicological characterization...69:23
  - Rat - inhalation - 90-day...71:33
- Hydrogen sulfide
  - Mouse - inhalation - 90-day...71:37
  - Rat - inhalation - 90-day...71:37
- Isobutyraldehyde
  - Toxicological characterization...69:25
- Isoproterenol hydrochloride
  - Mouse - long-term - carcinogenicity...79:29
  - Rat - long-term - carcinogenicity...79:29
- Lead chromate
  - Human - workplace exposure - carcinogenicity...79:15
- Manganese sulfate
  - Mouse - short-term - carcinogenicity...72:29
  - Rat - short-term - carcinogenicity...72:29
- Methyl bromide
  - Toxicological characterization...70:5
- Methyl chloride
  - Rat - inhalation - long-term - Reproduction and fertility...71:31
- Methyl ethyl ketone
  - Rat - inhalation - 90-day...71:35
- Methylphenidate
  - Mouse - feed - short-term - carcinogenicity...72:33
  - Rat - feed - short-term - carcinogenicity...72:33
- 4,4'-Methylenebis(2-chloroaniline)(MOCA)
  - Human - workplace exposure - carcinogenicity...78:17
- 2-Mercaptobenzimidazole
  - Rat - feed - short-term - carcinogenicity...73:25
  - Toxicological characterization...69:27
- Methdilazine
  - Mouse - feed - carcinogenicity...72:31
  - Rat - feed - carcinogenicity...72:31
  - Mouse - gavage - long-term - carcinogenicity...78:25
  - Rat - gavage - long-term - carcinogenicity...78:25
- Molybdenum trioxide
  - Toxicological characterization...70:7
- Monochlorobenzene
  - Adult rat liver cells - carcinogenicity...75:19
- Naphthalene
  - Toxicological characterization...69:7
- p-Nitroaniline
  - Mouse - gavage - short-term - carcinogenicity...73:23
- o-Nitroanisole
  - Mouse - feed - short-term - carcinogenicity...73:25
- Nitrobenzene
  - Mouse - inhalation - 90-day...71:29
  - Rat - inhalation - 90-day...71:29

Nitrotoluene (undefined mixture)
  Carcinogenicity...73:27
Ochratoxin A
  Rat - gavage...69:5
Occupational chemical hazards
  Human - workplace exposure - epidemiology...78:15
Occupational hazards
  Human -workplace exposure - epidemiology...79:19
Perchloroethylene
  Human - workplace exposure - epidemiology...78:23
D-phenylalanine
  Toxicological characterization...70:9
Phosgene
  Carcinogenicity...73:29
Promethazine
  Mouse - gavage - short-term - carcinogenicity...73:31
  Rat - gavage - short-term - carcinogenicity...73:31
Propantheline bromide
  Mouse - feed - short-term - carcinogenicity...74:11
  Rat - feed - short-term - carcinogenicity...74:11
Quercetin
  Rat - feed - long-term - carcinogenicity...77:15
p-Quinone
  Long-term - carcinogenicity...78:27
Radionuclides
  Dog - Inhalation - carcinogenicity - mutagenicity...73:21
  Inhalation...73:19
  Rodents - Inhalation - carcinogenicity - mutagenicity...73:21
Riddelline
  Mouse - gavage - short-term - carcinogenicity...74:15
  Rat - gavage - short-term - carcinogenicity...74:15
Seneciphylline...74:13
Silica
  Rat - inhalation - short-term...71:43
Sodium arsanilate
  Carcinogenicity...68:31
Sucrose
  Toxicological characterization...70:11
Talc
  Toxicological characterization...70:13
  -trans-delta(9)-Tetrahydrocannabinol
  Toxicological characterization...70:15
Tetrahydrofuran
  Mouse - gavage - carcinogenicity...74:17
  Rat - gavage - carcinogenicity...74:17
Thorium-230
  Human - workplace exposure - long-term - carcinogenicity...79:13
alpha-Tocopherol
  Toxicological characterization...70:14
Triamterene
  Mouse - feed - carcinogenicity...74:19
  Rat - feed - carcinogenicity...74:19

2,4,5-Trichlorophenol
  Carcinogenicity...68:33
1,2,3-Trichloropropane
  Mouse - gavage - carcinogenicity...74:21
  Rat - gavage - carcinogenicity...74:21
Tricresyl phosphate
  Mouse - gavage - carcinogenicity...74:23
  Rat - gavage - carcinogenicity...74:23
1,2,4-Trichlorobenzene
  Adult rat liver cells - carcinogenicity...75:15
Trimellitic anhydride
  Mouse - feed - short-term - carcinogenicity...75:13
  Rat - feed - short-term - carcinogenicity...75:13
Trimellitic anhydride
  Mouse - feed - gavage - carcinogenicity...75:13
  Rat - feed - gavage - carcinogenicity...75:13
Tungsten carbide [WC]
  Short-term - carcinogenicity...74:25
Turmeric oleoresin (curcumin)
  Mouse - feed - carcinogenicity...76:15
  Rat - feed - carcinogenicity...76:15
Vanadium pentoxide
  Toxicological characterization...70:19
C. I. Vat Blue 1
  Toxicological characterization...69:17
Vitamin E
  Toxicological characterization...70:17
Vinylidene fluoride
  Carcinogenicity...68:35
1-Vinyl-2-pyrrolidinone polymers
  Carcinogenicity...68:29
Zinc chromate
  Human - workplace exposure - carcinogenicity...79:15
Zinc oxide
  Toxicological characterization...70:21

# Index by Chemical Abstracts Service Registry Number

50-00-0 Formaldehyde...56:3, 62:11, 77:31, 79:11
50-34-0 Propantheline bromide...74:11
50-81-7 Ascorbic acid...63:5
51-30-9 Isoproterenol hydrochloride...60:13, 79:29
54-31-9 Furosemide...62:17
55-31-2 Epinephrine hydrochloride...79:27
54-85-3 Isoniazid...55:21
56-38-2 Parathion (Diethyl p-nitrophenyl phosphorothioate...55:21
56-75-7 Chloramphenicol...60:23
57-41-0 Dephenylhydantoin(phenytoin)...76:23
57-50-1 Sucrose...70:11
57-66-9 Probenecid...56:33
57-68-1 Sulfamethazine...65:19
57-97-6 7,12-Dimethylbenz(a) anthracene (DMBA)...63:21
58-08-2 Caffeine...64:31
58-93-5 Hydrochlorothiazide...61:19
59-02-9 alpha-Tocopherol...70:17
59-09-0 Chlorpromazine hydrochloride...57:29
59-87-0 Nitrofurazone...65:11
60-13-9 dl-Amphetamine sulfate...57:7
60-87-7 Promethazine...73:31
61-76-7 Phenylephrine hydrochloride...56:13
64-75-5 Tetracycline hydrochloride...56:25
67-20-9 Nitrofurantoin...65:9
67-56-1 Methanol...55:23, 62:11
67-72-1 Hexachloroethane...64:19
68-12-2 Dimethylformamide...62:9, 72:27
69-09-0 Chlorpromazine hydrochloride...77:21
71-43-2 Benzene...55:25, 67:7, 78:31
71-55-6 1,1,1-Trichloroethane...59:9
74-83-9 Methyl bromide...70:5
74-87-3 Methyl chloride...71:31
75-05-8 Acetonitrile...70:23
75-07-0 Acetaldehyde...68:19
75-15-0 Carbon disulfide...71:39
75-21-8 Ethylene oxide...78:21, 79:17, 79:21
75-38-7 Vinylidene fluoride...68:35
75-44-5 Phosgene...73:29
78-11-5 Pentaerythritol tetranitrate...57:17
78-30-8 Tri-o-cresyl phosphate...55:21
78-42-2 Tris(2-ethylhexyl) phosphate...59:11, 65:21
78-84-2 Isobutyraldehyde...69:25
78-93-3 Methyl ethyl ketone...55:3, 71:35
79-06-1 Acrylamide...55:21, 55:23
79-11-8 Chloroacetic acid...57:19
79-57-2 Oxytetracycline...57:13
80-62-6 Methyl methacrylate...60:25
81-11-8 4,4'Diamino-2,2'-stilbenedisulfonic acid...57:5

| | |
|---|---|
| 81-49-2 | 1-Amino-2,4-dibromoanthraquinone...64:33 |
| 81-55-0 | 1,8-Dihydroxy-4,5-dinitroanthraquinone...69:19 |
| 83-79-4 | Rotenone...59:21 |
| 84-66-2 | Diethyl phthalate...77:25 |
| 87-62-7 | 2,6-Xylidine...56:29, 59:13 |
| 87-86-5 | Pentachlorophenol...66:5 |
| 89-63-4 | 4-Chloro-2-nitroaniline...70:27 |
| 91-20-3 | Naphthalene...69:7 |
| 91-23-6 | o-Nitroanisole...73:25 |
| 91-64-5 | Coumarin...57:27 |
| 91-79-2 | Thenyldiamine (Pharmaceutical)...64:9 |
| 91-80-5 | Methapyrilene...64:15 |
| 91-81-6 | Tripelenamine...64:7 |
| 91-84-9 | Pyrilamine...64:11 |
| 92-48-8 | 6-Methylcoumarin...57:23 |
| 93-76-5 | 2,4,5-T...66:5 |
| 94-66-2 | Diethyl phthalate...57:31 |
| 94-75-7 | 2,4-D...66:5 |
| 95-50-1 | 1,2-Dichlorobenzene...55:31 |
| 95-86-3 | 2,4-Diaminophenol...64:25 |
| 95-95-4 | 2,4,5-Trichlorophenol...68:33 |
| 96-09-3 | Styrene oxide...65:17 |
| 96-18-4 | 1,2,3-Trichloropropane...74:21 |
| 96-45-7 | Ethylenethiourea...76:25 |
| 98-00-0 | Furfuryl alcohol...77:33 |
| 98-01-0 | Furfural...77:13 |
| 98-85-1 | alpha-Methylbenzyl alcohol...61:23 |
| 98-95-3 | Nitrobenzene...71:29 |
| 100-01-6 | p-Nitroaniline...73:23 |
| 100-02-7 | p-Nitrophenol...65:13 |
| 100-40-3 | 4-Vinylcyclohexene...57:9 |
| 100-41-4 | Ethylbenzene...69:21 |
| 100-42-5 | Styrene...55:27 |
| 100-44-7 | Benzyl chloride...65:5 |
| 100-52-7 | Benzaldehyde..76:19 |
| 101-14-4 | 4,4'-Methylenebis(2-chloroaniline) (MOCA) |
| 101-68-8 | 4,4'-Diphenylmethane diisocyanate...77:27 |
| 101-90-6 | Diglycidyl resorcinol ether...63:9 |
| 101-77-9 | 4,4'-Methylenedianiline...63:13 |
| 103-90-2 | 4-Hydroxyacetanilide...57:25 |
| 104-55-2 | Cinnamaldehyde...64:27 |
| 106-46-7 | 1,4-Dichlorobenzene...55:33 |
| 106-47-8 | p-Chloroaniline...60:21 |
| 106-51-4 | p-Quinone...78:27 |
| 106-87-6 | 1-Vinyl-3-cyclohexene dioxide...60:29, 62:25 |
| 106-92-3 | Allyl glycidyl ether...76:17 |
| 107-02-8 | Acrolein...59:23 |
| 107-07-3 | Ethylene chlorohydrin...58:19 |
| 107-15-3 | Ethylenediamine...60:5, 60:7, 60:9, 60:11, 60:17, 77:29 |

| | |
|---|---|
| 107-21-1 | Ethylene glycol...64:21 |
| 108-30-5 | Succinic anhydride...56:21, 59:17 |
| 108-46-3 | Resorcinol...59:29 |
| 108-78-1 | Melamine...63:11 |
| 108-86-1 | Bromobenzene...77:23 |
| 108-88-3 | Toluene...55:21, 57:3, 62:3, 62:11 |
| 108-90-7 | Chlorobenzene...55:29 |
| 108-94-1 | Cyclohexanone...65:23 |
| 109-86-4 | 2-Methoxyethanol...65:3, 66:9, 79:23 |
| 109-99-9 | Tetrahydrofuran...74:17 |
| 110-00-9 | Furan...76:27 |
| 110-54-3 | Hexane...55:21, 69:23, 71:33 |
| 110-80-5 | 2-Ethoxyethanol...65:3, 66:9, 79:23 |
| 111-15-9 | 2-Ethoxyethanol acetate...65:3, 79:23 |
| 111-30-8 | Glutaraldehyde...57:15 |
| 111-76-2 | 2-Butoxyethanol...65:3, 66:9, 79:23 |
| 111-90-0 | 2-(2-Ethoxyethoxy)ethanol...65:3 |
| 113-45-1 | Methylphenidate...72:33 |
| 115-07-1 | Propylene...58:23 |
| 115-09-3 | Methylmercuric chloride...55:23 |
| 115-96-8 | Tris(2-chloroethyl) phosphate...59:27, 79:25 |
| 117-39-5 | Quercetin...77:15 |
| 119-90-4 | 3,3'-Dimethoxybenzidine...68:25 |
| | (petroleum)...66:13, 66:15 |
| 119-93-7 | 3,3'Dimethylbenzidine...76:13 |
| 120-32-1 | o-Benzyl-p-chlorophenol...72:13 |
| 120-40-1 | Lauric acid dietholamine (con 1/1); (Bis(2-hydroxyethyl)lauramide)...61:21 |
| 121-19-7 | Roxarsone...59:19 |
| 121-79-9 | Propyl gallate...63:17 |
| 123-72-8 | Butyraldehyde...72:11 |
| 123-77-3 | Azodicarbonamide...77:17 |
| 124-40-3 | Dimethylamine...71:27 |
| 124-64-1 | Tetrakis (hydroxymethyl) phosphonium chloride...55:17 |
| 127-18-4 | Tetrachloroethylene...56:23, 59:15, 78:23 |
| 127-85-5 | Sodium arsanilate...68:31 |
| 132-98-9 | Penicillin V Potassium...58:7 |
| 135-88-6 | N-phenyl-2-naphthalamine...62:21 |
| 136-77-6 | 4-Hexylresorcinol...61:17 |
| 137-09-7 | 2,4-Diaminophenol dihydrochloride...64:25 |
| 140-88-5 | Ethyl acrylate...58:15 |
| 148-65-2 | Chlorothen...72:25 |
| 150-68-5 | Monuron...58:21 |
| 298-81-7 | 8-Methoxypsoralen...65:7 |
| 303-47-9 | Ochratoxin A...62:23, 69:5 |
| 333-18-6 | Ethylenediamine dihydrochloride...60:5, 60:7, 60:9 |
| 396-01-0 | Triamterene...74:19 |
| 458-37-7 | Curcumin...76:15 |
| 480-81-9 | Seneciphylline...74:13 |
| 482-89-3 | C.I. Vat Blue 1...69:17 |

469-21-6 Doxylamine...64:23
470-82-6 1,8-Cineole...64:29
509-14-8 Tetranitromethane...55:15, 56:27
518-47-8 C.I. Acid Yellow 73...58:11
523-47-7 (-)-beta-Cadinene...77:19
542-56-3 Isobutyl nitrite...64:17
542-75-6 1,3-Dichloropropene...63:7
542-78-9 Malonaldehyde...58:17
555-30-6 Methyldopa...67:29
569-61-9 C.I. Basic Red 9, monohydrochloride...58:13
583-39-1 2-Mercaptobenzimidazole...69:27
584-84-9 2,4-Toluene diisocyanate...59:7
598-55-0 Methyl carbonate...67:27
673-06-3 D-phenylalanine...70:9
828-00-2 Dimethoxane...61:11
868-85-9 Dimethyl hydrogen phosphite...59:3
924-42-5 N-Methylolacrylamide...57:21
989-38-8 Rhodamine 6G...58:9
1271-19-8 Titanocene dichloride...60:31
1306-19-0 Cadmium oxide...68:21
1306-23-6 Cadmium sulfide...68:23
1309-37-1 Ferric oxide...62:5
1313-27-5 Molybdenum trioxide...70:7
1314-13-2 Zinc oxide...70:21
1314-62-1 Vanadium pentoxide...70:19
1317-71-1 Olivine...62:7
1325-37-7 C.I. Direct Yellow 11...69:15
1330-20-7 Xylene...62:11, 67:11
1330-78-5 Tricresyl phosphate...74:23
1338-23-4 2-Butanone, peroxide...62:15
1344-00-9 Sodium aluminosilicate...56:15
1406-18-4 Vitamin E...70:17
1817-73-8 2-Bromo-4,6-dinitroaniline...69:9
1854-26-8 Dimethyloldihydroxyethyleneurea...60:19
1972-08-3 -trans-delta(9)-Tetrahydrocannabinol...70:15
1982-37-2 Methdilazine...72:31, 78:25
2058-46-0 Oxytetracycline hydrochloride...57:13
2244-16-8 d-Carvone...76:21
2385-85-5 Mirex...63:15
2425-85-6 C.I. Pigment Red 3...61:15
2429-73-4 C. I. Direct Blue 2...72:17
2429-74-5 C. I. Direct Blue 15...68:27
2429-74-5 C. I. Direct Blue 15...68:25
2475-45-8 C. I. Disperse Blue 1...65:25
2610-05-1 C. I. Direct Blue 1...68:25
2624-17-1 Sodium cyanurate...56:17
2757-90-6 Agraitine...63:3
5634-39-9 Iodinated glycerol...62:19
5716-15-4 Maleic hydrazide diethanolamine salt...58:5

5989-27-5 d-Limonene...60:27
6358-31-2 C. I. Pigment Yellow 74...72:21
6459-94-5 C. I. Acid Red 114...72:15
6471-49-4 C.I. Pigment Red 23...61:13
7166-19-0 beta-Bromo-beta-nitrostyrene...69:11
7440-38-2 Arsenic...78:29
7440-41-7 Beryllium...66:11
7487-94-7 Mercuric chloride...59:31
7631-86-9 Silica...62:7, 71:43
7681-49-4 Sodium fluoride...56:19
7758-97-6 Lead chromate...79:15
7782-50-5 Chlorine...64:3, 71:41
7783-06-4 Hydrogen sulfide...71:37
7783-81-5 Uranium-238 hexafluoride...55:9
7785-87-7 Manganese sulfate...72:29
8024-37-1 Turmeric oleoresin (cucumin)...76:15
9002-92-0 Dodecyl alcohol, ethoxylated; (polyethoxylated dodecanol)...59:5
9003-39-8 1-Vinyl-2-pyrrolidinone polymers...68:29
9005-65-6 Polysorbate 80...60:15
1321-12-6 Nitrotoluene (undefined mixture)...73:27
10028-15-6 Ozone...59:25
10098-97-2 Strontium-90...56:9
10325-94-7 Cadmium nitrate...69:13
10361-37-2 Barium chloride...70:25
10599-90-3 Chloramine...72:23
12001-28-4 Crocidolite...63:27
12001-29-5 Chrosotile...63:25
12018-19-8 Zinc chromate...79:15
12070-12-1 Tungsten carbide [WC]...74:25
12172-73-5 Amosite...63:23
12266-32-9 Plutonium-238 dioxide...61:7, 73:21
12741-11-6 Zirconium silicate...62:7
13530-65-9 Zinc chromate...79:15
13552-44-8 4,4'-Methylenedianiline dihydrochloride...63:13
13961-86-9 Oleic acid dietholamine salt...65:15
13968-56-4 Plutonium-239 tetranitrate...61:7, 73:21
14018-95-2 Zinc chromate...79:15
14047-09-7 3,3',4,4'-Tetrachloroazobenzene...58:3
14807-96-6 Talc...70:13
14808-60-7 Quartz...62:5
14269-63-7 Throium-230...79:13
14567-73-8 Tremolite...63:19
15117-96-1 Uranium-235...55:9
16127-62-1 Amosite...63:23
16561-29-8 12-O-Tetradecanoylphorbol 13-acetate (TPA)...63:21
19086-72-7 Olivine...62:7
21232-47-3 3,3',4,4'-Tetrachloroazoxybenzene...58:3
21645-51-2 Hydrated alumina (Aluminum hydroxide)...62:5
22840-34-2 Plutonium-239 dioxide...56:11, 61:7, 73:21
23246-96-0 Riddelline...74:15
28407-37-6 C. I. Direct Blue 218...72:19
26628-22-8 Sodium azide...56:31
26677-58-7 Plutonium-239 citrate...56:11

36355-01-8 Hexabromobiphenyl...64:13
52551-67-4 HC Yellow No. 4...64:5
53799-46-5 Crocidolite...63:27
58425-86-8 Aluminum silicate...62:7
61076-97-9 Chrysotile...63:25
61105-31-5 Crocidolite...63:27
64741-55-5 Light catalytic cracked naphtha...67:3, 67:5
64741-56-6 Vacuum residuum (petroleum)...67:21
64741-62-4 Catalytic cracked clarified oil (petroleum)...67:23
64741-63-5 Light catalytic reformed naphtha (petroleum)...66:25, 66:27
64741-87-3 Sweetened naphtha (petroleum)...66:17, 66:19
64742-48-9 Hydrotreated heavy naphtha (petroleum)...67:17, 67:19
64742-80-9 Hydrodesulfurized middle distillate (petroleum)...66:13, 66:15
64742-81-0 Hydrodesulfurized kerosene (petroleum)...66:21, 66:23
68334-30-5 Petroleum products, diesel oil...61:9, 73:17
68512-90-3 Diesel test fuel...73:17
68476-34-6 Fuels, diesel, No. 2...61:9, 73:17

## Supporting and Performing Organizations

American Petroleum Institute
 *Coate, W....67:7
 *Furst, A....67:25
 *Jagannath,...67:13
 *Schroeder, R.E....67:11
 *Thompson, G. W....66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21
 *Ulrich, C.E....66:13, 66:17, 66:21, 66:25, 67:5, 67:17
 *Weaver, N.K....55:27
  Sponsored studies...67:23
American Health Foundation
  Williams, G. M....75:15, 75:17, 75:19
Battelle Columbus Laboratory...55:17, 56:23, 57:21, 58:17, 59:21, 60:17, 60:21, 60:29, 61:11, 62:21, 62:23, 62:25, 63:5, 69:5, 72:13, 74:23, 76:23, 76:25, 79:27
Battelle Pacific Northwest Laboratory...58:23, 59:15, 60:25, 61:11, 62:5, 64:13, 76:17
Biodynamics...67:11
Borriston Research Laboratories
  Niemeier, R. W....62:7
Brookhaven National Laboratory...71:43
  Drew, R.T....59:23, 59:25, 64:3
  Kutzman, R.S....59:23, 59:25, 64:3
Bushy Run Research Center, Union Carbide
  DePass, L. R....60:5, 60:7, 60:9, 60:11
  Peterson, L.G....60:11
  Woodside, M. D....60:5, 60:7
  Yang, R.S.H...60:5, 60:7, 60:9, 60:11, 60:17
  Zelenak, J.P....60:9
Central Institute for Nutrition & Food...68:19
Chemical Industry Institute of Toxicology
 *Barrow, C. S....71:27, 71:41
 *Bus, J.S....71:37, 71:39
 *Drew, R. T....71:43
 *Gralla, E....55:3, 55:5, 71:33, 71:35
  Hamm, T....71:29, 71:31
 *Kutzman, R. S....71:43
 Sponsored studies...71:27, 71:29, 71:31
Chemical Manufacturers Association...78:29, 78:31
 *Stack, C.R....55:27, 55:29, 55:31, 55:33, 75:15, 75:17, 75:19, 79:21, 79:23
Department of Energy...56:9, 56:11, 61:7, 61:9
Dow Chemical USA
  John, J.A....55:27, 55:29, 55:31, 55:33
  Sponsored studies...60:7, 60:9, 60:11
Elars Bioresearch Laboratories, Inc...67:9, 67:15
Enviro Control, Inc.
  Futagaki, S....60:3
  Thomas, P....60:3
Eppley Institute for Cancer Research...63:3

*Project Officer/Compound Manager

Frederick Cancer Research Center...63:7, 63:15, 65:5, 65:17, 65:23
George Washington University
  Anderson, R. J....55:21
Gulf South Research Institute...57:15, 58:5, 58:11, 59:5, 59:9, 61:21, 62:15, 63:21, 65:13, 65:15, 72:23, 72:29, 74:17
Hazelton Laboratories America, Inc....63:19, 63:23, 63:25, 63:27, 67:7, 68:27, 70:23, 72:15, 76:13
  Coate, W. B....55:25
Hazelton Raltec Inc....72:33, 73:23, 73:25, 74:15, 74:21
Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute 73:13, 73:15, 73:17, 73:19, 73:21
  Benjamin, S.A....56:11
  Brooks, A. L....56:11
  Brownstein, D....56:11
  Hahn, F.F....56:9
  McClellan, R. O....61:7, 61:9, 73:13, 73:15
  Muggenberg, B. A....56:9, 56:11
  Snipes, M. B....56:9
International Research & Development Corp....57:3, 57:5, 57:19, 57:23, 57:27, 57:31, 59:29, 59:31, 60:13, 60:19, 60:23, 64:17, 66:13, 66:17, 66:21, 66:25, 67:5, 67:17, 72:19, 74:11, 74:19, 76:21
  Ulrich, C....71:41
Institute for Medical Research
  Prehn, R. I....61:3
Litton Bionetics...57:9, 57:11, 58:19, 59:3, 59:7, 59:11, 63:11, 65:21, 67:13, 72:31, 73:31
Mason Research Institute...56:17, 56:29, 56:33, 57:17, 57:25, 57:29, 58:13, 58:21, 59:13, 60:31, 62:19, 63:9, 63:13, 64:5 64:19, 64:25, 64:33, 76:15, 77:15
Michigan State University
  Gray, J. I....61:5
Microbiological Associates...56:21, 56:31, 57:7, 59:17, 59:27, 60:27, 61:23, 67:27
  Matthews, H....79:25
Midwest Research Institute...55:15, 56:27
Morgantown Energy Technology Center...73:13, 73:15,
National Cancer Institute
  Blair, A....62:11
  *Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
  Miller, B....62:11
  *Sestito, J....62:13
  *Spirtas, R....62:13
  Sponsored studies...61:5
National Center for Toxicological Research...55:19, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19, 75:13, 75:21
National Institute of Environmental Health Sciences...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21
  Sponsored studies...55:21, 55:23, 58:3

*Project Officer/Compound Manager

National Institute for Occupational Safety and Health...66:3, 66:5, 66:7, 66:9, 66:11, 69:21, 70:19, 78:15, 78:17, 78:19, 78:21, 78:23, 79:11, 79:13, 79:15, 79:17, 79:19
*Brown, D....55:9, 78:23
*Boeniger, M....55:11
*Cameron, T....62:3, 62:5, 62:7, 62:9, 62:11
*Cox, C....60:3
*Donaldson, H....66:3
*Elliott, L....56:3, 56:7
*Haring, M....79:15
*Herrick, B....60:3
*Honchar, P....66:5
Lewis, T. R....62:5
*Meinhardt, T....78:21
*Morrison, J....79:19
*Mullan, R....78:15
Nelson, B.K....65:3
*Reeve, G....66:7
*Okun, A....66:11
*Robinson, C....55:7
*Roscoe, R....79:13
*Rosenberg, M....66:9
*Steenland, K....78:19, 79:17
Stern, F. B....62:3
*Taylor, P....55:13
*Wagner, W. D....62:9
Ward, E....78:17
*Whalen, J....56:5
*Whitmire, C....55:15
Sponsored studies...55:7, 55:9, 55:13, 55:11, 56:3, 56:5, 56:7, 65:3
National Institutes of Health
Sponsored studies...61:3
National Toxicology Program...69:9, 69:11, 69:13, 69:15, 69:17, 69:19, 69:23, 69:25, 69:27, 70:5, 70:7, 70:9, 70:11, 70:13, 70:15, 70:17, 70:21, 72:11, 72:17, 72:25, 72:27, 73:27, 73:29, 74:13, 74:21, 74:25, 75:13, 75:21, 79:25, 79:27, 79:29
*Abdo, K....60:15, 62:15, 62:21, 63:17, 64:21, 70:9, 70:17
*Birnbaum, L....59:9, 72:13, 77:17
*Boorman, G....76:17
*Brown, S....69:7, 70:13
*Chkabra, R....60:29, 61:21, 62:25, 64:13, 65:15, 73:23, 73:25, 76:23, 76:25
*Chu, K....69:9, 70:5
*Creasia, D....65:5, 65:17, 65:23
*Dean, J....60:17, 65:11
*Dieter, M.P....56:15, 57:11, 59:7, 59:31, 60:31, 61:23
*Douglas, J. F....55:19, 63:5, 63:7, 64:7, 64:9, 64:11, 64:15, 64:23, 64:27, 64:29, 64:31, 65:19
*Dunnick, J...57:7, 58:7, 59:3, 61:17, 65:7, 69:13, 69:23, 74:11
*Eastin, W....69:5, 69:5, 69:15, 72:21
*French, J....77:29

*Project Officer/Compound Manager

National Toxicology Program (Cont.)

*Goldman, D....70:15, 72:31, 74:15, 78:25
*Grieshaber, C.K....56:13, 56:33, 57:25, 60:23, 67:29, 76:15, 78:27, 79:27
*Gupta, B....59:5, 70:25, 74:17
*Hartwell, W....58:5, 59:19, 59:21, 60:21
*Huff, J....63:15, 64:33
*Irwin, R....59:29, 64:25, 65:13, 69:19, 74:23, 76:27, 77:13, 77:33
*Jackson, C....64:17
*Jameson, C. W....55:17, 60:27, 63:3
*Kluwe, W. M....57:5, 65:9, 72:33, 76:19, 77:23, 77:25
*Lamb, J. C....57:29, 63:13, 77:21, 77:27
*Luster, M....73:31
*Maronpot, R....77:31
*Matthews, H....59:11, 59:27, 65:21
*McConnell, E....57:23, 57:27, 63:9, 63:19, 63:21, 63:23, 63:25, 63:27
*McCoy, J.L....60:19, 69:25, 70:23, 70:27, 76:21, 77:15
*Melnick, R....56:21, 59:17, 63:11
*Mennear, J....58:11, 58:13, 58:15, 61:13, 61:15, 65:25, 68:27, 69:17, 72:15, 72:19, 76:13
*Moorman, W....70:21
*Niemeier, R....70:19
*Padarathsingh, M....62:19
*Plotnick, H....69:21
*Powers, M....56:23, 57:3, 57:9, 57:15, 57:21, 77:19 59:15, 62:23, 64:5, 64:19
*Quest, J....67:27, 69:27, 70:7
*Stinson, S.F....56:29, 56:31, 58:9, 58:23, 59:13, 60:25
*Van Stee, E....60:13, 79:29
*Walters, D....72:29
*Ward, J.M....58:17, 58:19, 58:21, 61:11
*Weber, H....69:11
*Whitmire, C.E....56:17, 56:19, 56:25, 56:27, 57:13, 57:17, 57:19, 57:31, 61:19, 62:17, 70:11, 72:23, 74:19
Sponsored studies...59:23, 59:25, 64:3, 68:19, 68:21, 68:23, 68:25, 68:29, 68:31, 68:33, 68:35

Physiological Research Institute...56:13, 56:25, 53:19, 56:13, 56:25, 57:13, 61:17, 65:11, 67:29
Raltech Scientific Services...66:15, 66:19, 66:23, 66:27, 67:3, 67:19, 67:21, 67:23
Southern Research Institute...58:9, 58:15, 59:19, 60:15, 61:13, 61:15 63:17, 64:21, 65:9, 65:25, 76:19, 76:27, 77:13
SRI International...61:19, 62:17, 65:7

*Project Officer/Compound Manager

Springborn Institute for Bioresearch, Inc....58:7
Texaco
  Sponsored studies...60:5, 60:7, 60:9, 60:11
ToxiGenics, Inc.
  Cavender, F....55:3, 55:5, 71:33, 71:35
  Morgan, J. M....71:37, 71:39
Tracor-Jitco Inc....55:15, 55:17, 56:13, 56:15, 56:17, 56:19, 56:21, 56:23, 56:25, 56:27, 56:29, 56:31, 56:33, 57:9, 57:11, 57:13, 57:15, 58:5, 58:7, 58:9, 58:11, 58:13, 58:15, 58:17, 58:19, 58:21, 58:23, 59:3, 59:5, 59:7, 59:9, 59:11, 59:15, 59:17, 59:19, 59:21, 60:25, 60:27, 61:17, 61:19, 61:21, 61:23, 62:15, 62:17, 62:19, 62:21, 63:3, 63:5, 63:9, 63:17, 63:21, 65:7, 65:9, 65:11, 65:13, 65:15, 65:21, 65:25, 67:27, 67:29, 72:23
Union Carbide Corporation
  Sponsored studies...60:5, 60:7, 60:9, 60:11
United Auto Workers of America...56:5
University of Birmingham, England
  Stewart, A....62:13
  Waterhouse, J....62:13
University of Rochester
  Merigan, W. H....55:23
University of San Francisco...67:25
University of Wisconsin
  Hsia, M. I....58:3

*Project Officer/Compound Manager

# TOXICOLOGY INFORMATION RESPONSE CENTER
# (TIRC)

Founded in 1971, TIRC serves as a national and international center for toxicology information to the scientific, administrative, and public communities on individual chemicals, chemical classes, and a wide variety of toxicology-related topics.

**ORGANIZATION**—Sponsored by Toxicology Information Program National Library of Medicine; located at Oak Ridge National Laboratory (ORNL).

**PERSONNEL**—Multidisciplinary scientific backgrounds specializing in bibliographic literature compilations, state-of-the-art reviews, and consultations. Scientific interaction with ORNL research staff.

**INFORMATION RESOURCES**—On-line access to MEDLINE, TOXLINE, RECON(DOE), DIALOG (Lockheed), ORBIT (SDC), BRS, and ORNL computerized data bases; secondary sources include *Biological Abstracts, BioResearch Index, Chemical Abstracts, Current Contents, Excerpta Medica, Index Medicus, Science Citation Index, Energy Research Abstracts, Nutrition Abstracts and Reviews, Air Pollution Abstracts*, and others.

**SEARCH REQUEST INFORMATION**—Definition of request, subject, scope, limitations, time and literature coverage, languages, suggested completion date, and agreement on cost.

**SEARCH COMPLETION TIME**—Immediate telephone answer; eight to twelve days—computerized data base searching; three to four weeks—in-depth literature searches.

**INFORMATION SERVICES**—Specific published toxicology data, individualized literature searches, topical bibliographies, annotated and/or key-worded bibliographies, state-of-the-art reviews, custom searches of computerized data systems, SDI service, and selected reports available from NTIS.

**COST**—$30/hour — domestic requests, $35/hour — overseas requests. Computer-associated charges, reproduction costs, and use fees for copyrighted materials assessed in addition to the hourly rate. Payment collected by NTIS by direct billing or deposit accounts.

**CONTACT THE CENTER**—Phone inquiries (615)576-1743 (FTS: 626-1743). Written requests should be mailed to:

Toxicology Information Response Center
Information Center Complex
Oak Ridge National Laboratory
Post Office Box X, Building 2024
Oak Ridge, Tennessee 37830

NATIONAL LIBRARY OF MEDICINE
TOXICOLOGY INFORMATION PROGRAM

## NOTICE OF RESEARCH PROJECT

# TOX-TIPS

NATIONAL LIBRARY OF MEDICINE
Toxicology Information Program
8600 Rockville Pike Bethesda, Maryland 20209
Tel: (301) 496-1131

SUPPORTING ORGANIZATION:

SUPPORTING ORGANIZATION NUMBER(S):

Contract No:
and/or
Control No:

PROJECT TITLE:

INVESTIGATOR(S):

DEPARTMENT/SPECIALTY, SCHOOL OR DIVISION

PERFORMING ORGANIZATION:

Name and Address.
Including Zip Code.

PERIOD FOR THIS NRP:

Start Date:

End Date:

Annual Funding:

PROJECT SUMMARY:

*Before completing this form, please see reverse side for instructions.*

## INSTRUCTIONS FOR FILLING IN THE FORM

### Supporting Organization

Enter company name, government agency or other organizational entity providing financial support. The number assigned to a grant or contract *should* be included here.

### Project Title

Be as concise and specific as possible. The title should refer specifically to a long-term toxicology test or study.

### Investigator(s)

Enter name of individual in charge of scientific work on the project first. The names of other scientists designated by the principal investigator may also be included. Units to which project scientists are attached might include such branches as "chemical division," "research division," or "toxicology branch."

### Performing Organization

Enter name of organization where work is actually being done.

### Start Date, End Date and Annual Funding

Enter the dates of beginning and end of fiscal year for which annual funding total applies.

### Project Summary

Please include as a *minimum* the following information:

1. The name of the compound or agent being tested. Be as specific as possible. Chemical or structural formulas would be helpful if readily available, as would the CAS Registry Number.
2. The type of organism or test system being used including strain or genus and species wherever appropriate.
3. Route of administration of compound or agent under investigation (e.g., inhalation, gavage, via food or water).
4. Duration of administration of the test compound or agent and the length of followup studies.
5. The parameters to be used in evaluating toxicity (e.g., pulmonary function studies, histopathology, blood chemistries, behavioral changes, etc.).

### Send All Notices of Research Projects Directly To:

Editor, TOX-TIPS
Toxicology Information Program
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496-1131

*U.S. GOVERNMENT PRINTING OFFICE : 1983 O-381-756/604

**NATIONAL LIBRARY OF MEDICINE**
SPECIALIZED INFORMATION SERVICES
TOXICOLOGY INFORMATION PROGRAM

# CHEMLINE
CHEMICAL DICTIONARY ONLINE
# CONDENSED

---

Bethesda, Maryland 20209

---

**CHEMLINE DEFINED**

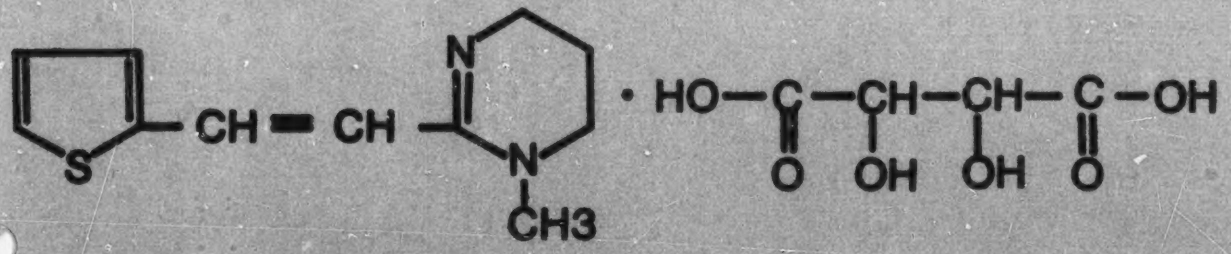
CHEMLINE (CHEMical Dictionary onLINE) is the National Library of Medicine's online, interactive chemical dictionary file created by the Specialized Information Services in collaboration with Chemical Abstracts Service (CAS). It provides a mechanism whereby over 500,000 chemical substances can be searched and retrieved online. This file contains CAS Registry Numbers; molecular formulas; CA chemical index nomenclature; generic and trivial names; and a locator designation which points to other files in the NLM system and the TSCA Inventory. In addition, where applicable, each CAS Registry Number record in CHEMLINE contains ring information including: number of component rings within a ring system, ring sizes, ring elemental compositions, and component line formulas.

**CHEMLINE ACCESSED**

CHEMLINE is accessed by a large variety of typewriter-like terminals connected to a central computer facility located at the National Library of Medicine in Bethesda, Maryland. The communications linkage is provided by nation-wide networks using telephone lines and small computers with access nodes located in many cities.

**CHEMLINE SEARCHED**

The user searches CHEMLINE by entering a chemical name, generic name, trivial name, company identification name, or a molecular formula. If the exact name of a chemical substance is unknown, a search may be conducted using name fragments, formula fragments, and/or ring analysis terms. This feature also allows searching at a substructure level. Consider the molecule pyrantel tartrate:



**CHEMLINE AVAILABILITY** CHEMLINE is available at NLM Monday, Wednesday, and Thursday from 3:00 A.M. to 8:00 P.M.; Tuesday and Friday from 3:00 A.M. to 9:00 P.M.; and Saturday from 9:00 A.M. to 5:00 P.M. (Eastern Time.)

**CHEMLINE COST** The cost of access to the CHEMLINE file is $101 per hour during prime time (10:00 A.M. to 5:00 P.M.), and $94 per hour at all other times. There is a charge of $0.45 per page for offline printouts.

**CHEMLINE USER SERVICES** For Online Systems services including access to the CHEMLINE file contact:

MEDLARS Management Section
National Library of Medicine
8600 Rockville Pike
Bethesda, Md. 20209
Telephone: (301) 496–6193

For CHEMLINE content including search strategies contact:

Specialized Information Services
National Library of Medicine
8600 Rockville Pike
Bethesda, Md 20209
Telephone: (301) 496–1131

---

**U.S. DEPARTMENT OF COMMERCE**
**National Technical Information Service**
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

**PRINTED MATTER**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL